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NAME OF AUTHOR/*NOM DE L'AUTEUR* DENNIS M. STANG

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NAME OF SUPERVISOR/*NOM DU DIRECTEUR DE THÈSE* W.C. Riddell

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THE UNIVERSITY OF ALBERTA

THE ECONOMICS OF REGULATION OF THE PAY-TV INDUSTRY

by

© DENNIS MICHAEL STANG

A THESIS

SUBMITTED TO THE FACULTY OF GRADUATE STUDIES AND RESEARCH
IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE DEGREE
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THE UNIVERSITY OF ALBERTA

FACULTY OF GRADUATE STUDIES AND RESEARCH

The undersigned certify that they have read, and recommend to the Faculty of Graduate Studies and Research, for acceptance, a thesis entitled THE ECONOMICS OF REGULATION OF THE PAY-TV INDUSTRY submitted by DENNIS MICHAEL STANG in partial fulfilment of the requirements for the degree of Master of ARTS

W. Riddell
Supervisor

K.W. Jenkins

G.B. Reschenthaler

Date August 4, 1978

ABSTRACT

This thesis examines the effects of different institutional arrangements and supply structures in the television industry on the use and allocation of scarce resources. In particular, economic analysis is applied to some of the regulatory issues involving pay television. Pay-TV is a new industry in Canada, and much confusion currently exists concerning its potential economic performance and the type of governmental regulation it should be subjected to.

Particular attention is paid to the issue of optimal variety in the television programming market. This includes an analysis of the ability of pay-TV to offer consumers a programming mix that more closely corresponds to their preferences than the programming presently offered by the advertiser-supported television system. Current television program uniformity and the reasons behind the lack of diversity is also evaluated.

This thesis also concerns itself with defining a set of conditions in an industry which might warrant government regulation from an economic viewpoint. Because regulation has become so prolific in our economy, it is very important to develop a general theoretical framework in which to evaluate its rationale. Justification for regulation will be based on the ability of the regulatory process to improve resource efficiency in an industry. This framework for regulatory justification is then applied to the pay-TV industry in Canada to determine what type of regulation the pay-TV industry should be subjected to.

It is discovered that although government regulation cannot be expected to significantly improve the economic performance of the pay-TV industry, regulation is politically inevitable because of the potential effects of pay-TV on the current broadcasting system, consumer equity, and some of the cultural aspects of our society.

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CHAPTER I

INTRODUCTION

Regulation can be defined as "the codification of modes of behavior for individual agents directed at maintenance of the social system". In other words, regulation places both incentives and restrictions on decision-making units aimed at inducing these units to perform in a desirable manner. Regulation is thus aimed at controlling or directing behavior.

The role of economic theory, on the other hand, is to identify the important determinants of economic behavior, so that hypotheses can be formulated concerning their relationships and impact on the various aspects of performance. Thus, although regulation of industry is a social phenomena, economics has much to offer in the formation and evaluation of regulatory policies.

More specifically, economic theory can be utilized in analyzing the effects of regulation on the use and allocation of scarce resources, on the institutional structure of the economy, and on the individual agent in the economy. Economic theory also provides principles and behavioral rules that, if followed, will produce optimum results (using widely accepted criteria of optimality).

The purpose of this thesis is to apply economic analysis to some of the issues involved with governmental regulation of the pay-TV industry in Canada. Because little economic literature has been generated on pay-TV, much of this thesis involves an identification of the major issues and a delineation of the relevant variables involved - a necessary step before a rigorous economic analysis of pay-TV is possible. Particular attention will be paid to the issue of optimal variety in the television programming market, as this appears to be a crucial issue in the debate over pay-TV.

Because this analysis is economic in nature (it is essentially impervious to many of the political, legal, and administrative considerations which normally form an integral part of any regulatory policy), it in itself is not intended to lead to the operationally ideal regulatory policy. Rather, it serves to isolate the areas in which economic analysis can be useful in determining the optimal regulatory policy stance.

The prescription of a purely economic ideal solution designed to achieve the desirable economic performance goals will also allow for a measurement of the costs of deviating from this ideal to achieve the non-economic performance goals. In other words, it can serve as a benchmark in assessing the economic costs of achieving any political objectives when it is compared to the actual regulatory policy adopted.

Some may question the appropriateness of applying the type of economic analysis presented in this thesis to the television industry. The economic theory presented is largely based in the context of the efficiency of the market system, and some may argue that the concept of television broadcasting in Canada, as established by various pieces of legislation and judicial decisions, is one of public service designed to meet political objectives, and not as an outcome of the market place. However, a television programming market certainly does exist, with both supply and demand components, and political objectives can simply be viewed as including those goals which the market fails to attain thus requiring government manipulation of the market to allow for their achievement. The television industry, and in particular pay-TV, lends itself quite readily to economic analysis in a market context.

The first question which should be answered in analyzing any type of regulation is: should the industry be regulated in the first place? The justifications for government regulation, if any, will then determine the form which regulation should take. The author suspects that sometimes government officials do not sufficiently consider the justifications for government intervention in a market, but begin by first asking: how should the industry be regulated?

Within this paper I will attempt to develop a framework for the economic justifications of government regulation. Although justifications for regulation are politically determined, there are certain conditions which can justify government intervention in a market solely on economic grounds. The pervasiveness and importance of regulation in our economy justifies a rigorous economic analysis of its rationale.

The pay-TV industry was chosen for this thesis because at the commencement of writing regulation of pay-TV was a timely issue in Canada. The unfortunate aspect of the pay-TV industry from a research point of view is that its limited experience as an industry forces research to sometimes rely on speculation and inference, a procedure which may lead to error in analysis. In addition, the lack of sufficient empirical data makes a rigorous analysis of the industry and prediction of potential economic performance very difficult.

There can be little doubt that pay-TV is potentially very important to our society. Although pay-TV has only been implemented in a relatively few cases to date, there is a very good chance that someday pay-TV, in the absence of restrictive regulation, will offer subscribers in most of our large metropolitan markets a diversity of services. In the words of

Canada's Minister of Communications, Jeanne Sauve, "the establishment of pay television service on a large scale is inevitable."[1]

Pay-TV can be expected to one day supplement the current advertiser-supported television system, and any type of television media is important because of its prominent effects on the political, social, and economic aspects of our society. The media plays an important role in our society in disseminating ideas and information. Almost every Canadian home has a television set,[2] and the average person views several hours of television daily.[3] Television has a pervasive impact on these people.

The Pay-TV Industry

In this first section the pay-TV industry will be defined in terms of its operations, history, potential growth and desirable characteristics. Before a regulatory policy can be developed, a knowledge of the technical and institutional environment of the industry is necessary. The political reaction to pay-TV in Canada will also be discussed.

---

[1] Canada, Dept. of Communications, "Pay Television", Notes for a Speech: By the Honourable Jeanne Sauve, (Ottawa: 1976), p. 2.

[2] Approximately 97 per cent of Canadian Homes have television sets as reported in the 1975 - 1976 Annual Report, Dept. of Communications (Ottawa: Supply and Services Canada, 1976).

[3] Daily television viewing per household in Canada averages about 6 hours 11 minutes. See E.S. Hallman, Broadcasting in Canada, Case Studies on Broadcasting Systems (London: Routledge and Kegan Paul, 1977), p. 31.

Definition of Pay-TV

Per-program or per-channel charge

Pay television, as its name suggests, is a system in which viewers pay directly for either each individual television program shown or for access to additional channels. Thus, pay-TV shifts part of the financing of television from advertisers to consumers and "introduces the box office concept into television."[4] Pay-TV provides additional or specialized programming to viewers who are willing to pay for it.

It appears that initially a per-channel charge will be necessary in Canada in order to generate sufficient revenues to make a pay-TV system financially viable. However, a per-program charge may eventually evolve to allow the delivery of programs that cater to the tastes of small viewer groups.[5]

How pay-TV works

Pay-TV is normally delivered (or "piggy-backed" as they say in the industry) over cable, although it can be implemented in an over-the-air system or even transmitted via satellite (the satellite is the ultimate in delivery systems; reception by a household in such a case could be through a disc-shaped sphere attached to the roof and connected to the television set). Pay-TV is most likely to operate through cable for a number of reasons.

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[4] Roger G. Noll, Merton J. Peck, and John J. McGowan, Economic Aspects of Television Regulation (Washington, D.C.: The Brookings Institution, 1973), p. 129.

[5] Recently, both Bell Canada and Western Coded Television Ltd. have separately developed a pay-TV system which would allow individual program payments by consumers instead of flat monthly charges. See "Royal Commission may delay pay-TV decision," Edmonton Journal, 18 June, 1977.

The term cable actually embraces three distinct forms of subscriber-supported communications service. Two of the categories form the cable industry as it exists today. The original CATV (community antenna television) brings improved television service to areas that experience poor reception. The second form not only strengthens existing signals, but also imports additional signals into an area or even originates programs of its own, thus providing a greater variety in programming. This service may involve a periodic billing to the customer, or a per-program or per-channel payment (pay-TV). As such, these two forms are primarily an extension of over-the-air broadcasting.

The third form of cable has the potential to become a comprehensive communications medium in its own right, offering a wealth of entertainment and information services. As many as a forty or eighty-channel system could not only provide a greater diversity of broadcasting service with improved signal quality, but it could also offer a wide array of non-broadcast entertainment and information services, including two-way communications.

Cable-delivery has several advantages for pay television, expecially when compared to the most likely alternative which is over-the-air pay-TV delivery. Most importantly, cable delivery takes advantage of sales and service economies that will make possible rapid introduction of pay-TV at the lowest possible cost.[6]

Pay-TV firms can capitalize on the investment already made in cable systems. Cable companies can expand the field capabilities necessary for pay-TV with only marginal cost increases, whereas a pay-TV network operating a separate field organization would have to incur major fixed costs. Cable companies already have an in-field organization that can perform the essential functions of sales, installation, servicing, and ongoing billing and customer service.

---

[6] Canadian Radio - Television and Telecommunications Commission, COMMENTS: Pay Television (Ottawa: 1976), comment #28 by PTN Pay Television Network, p. II-6 to II-10.

With a substantial subscriber list, cable-TV is also in an advantageous position to attract pay-TV customers. And consumers will also find it more convenient to deal with only a single television-related field organization — cable customers are accustomed to cable companies making service calls and thus the addition of a new field may only increase consumer confusion and create additional costs and thus possibly decrease consumer confidence in pay-TV services.

An over-the-air system would be burdened with shortages in off-air frequency and the sizeable cost of purchasing a UHF television station. The capacity of the coaxial cable, on the other hand, has no inherent limits, and cable offers the potential of widening the selection of channels far beyond what the present television system can offer. Moreover, the home equipment required for unscrambling pay-TV signals and for subscriber billing is simpler and cheaper with cable than with over-the-air broadcasting.[7]

Cable delivery is also desirable if pay-TV is ever to be developed into a system where payment is made on a per-program basis. Such a system requires the ability of the viewer to interact with the exhibitor (a two-way system), and this will only be feasible on a cable-based system.

---

[7] Richard Adler and Walter Baer, The Electronic Box Office: Humanities and Arts on the Cable, Praeger Special Studies in U.S. Economic, Social, and Political Issues (New York: Praeger Publishers, 1974), p. 20.

The coaxial cable has an information retrieval capacity that makes this possible.

Perhaps the biggest drawback of a cable-delivery system is its lack of universal availability. However, a reasonably high level of cable penetration currently exists in Canada (almost three million Canadian homes received cable by 1976 over 351 systems[8]), and in the near future almost all major communities in Canada can be expected to have cable services. According to data provided by PTN, cable should pass 70% of all Canadian households by the beginning of 1978.[9] Although an over-the-air system could deliver pay-TV programming to considerably more subscribers, this potential advantage is effectively eliminated by higher hardware costs that would have to be passed on in the form of higher subscriber charges.

From an economic viewpoint, the market if left to itself would certainly have sufficient motivation to find the best delivery system for pay-TV programming (best in terms of direct costs and benefits). However, equity considerations may favor a form of delivery which might not naturally result from the functioning of the market.

The necessary technology for a pay-TV system already exists, as there are a variety of devices and methods that can be used in the delivery of a pay-TV signal, whether it be cable or over-the-air delivery. Generally speaking, there are two common ways in which pay-TV systems operate. One is by sending scrambled signals to all subscribers (commonly called subscription television). A subscriber's TV set would be equipped with a converter that decodes the scrambled images and sounds for the viewer. A different code is used for each channel or program, and subscribers pay for a particular program or channel allowing their converter to decode the scrambled signal. Some pay-TV systems involve periodic billings, some require the deposit of coins into a device associated with the decoder, and some offer tickets that can be used to obtain the specific programming desired.

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[8] Canada, Dept. of Communications, 1975 - 1976 Annual Report.

[9] CRTC, COMMENTS: Pay Television, Comment #28 by PTN Pay Television Network, p. II-8.

Another way in which pay-TV programming can be delivered is through the use of a "trap" device that is installed right into the coaxial cable. A trap device or "tap" will be used if cable companies adopt a pay-by-program approach. An "addressable" tap can automatically direct programs to individual households. (However, the necessary hardware for this system is considerably more expensive than that used in a converter system.)

It may take many years and millions of dollars to develop, market and install the hardware for a pay-TV system. A typical pay-TV company will face large depreciation charges for hardware in their first few years of business, thus requiring a large market penetration for feasible operation. Actually, it is difficult to safely predict at this time exactly what type of technology will eventually be used by pay-TV systems in Canada, as the electronics industry is continually developing better and less expensive equipment for the delivery of pay television programming.

What pay-TV can offer

Initially, pay-TV can be expected to provide greater options in viewing entertainment. Judging from past experience, major film productions and sports events are likely to be the types of shows offered at first. In an analysis of consumer demand for pay-TV, the Stanford Research

Institute estimated the relative demands among program categories (Table 1.).

TABLE 1.

ESTIMATED PERCENTAGE OF PROGRAMS
TO BE OFFERED BY PAY-TV, BY CATEGORY

Program Category	Percentage of Programs Per Year
Major theatrical films	25
Major sports	52
Major performing arts	5
Educational specials	5
News specials	2
Popular entertainment concerts	11
Total	100%

Source: Stanford Research Institute, Analysis of Consumer Demand For Pay Television (Final Report); prepared for: Office of Telecommunications Policy (May, 1975), p. 72.

These estimates were based on the assumption that pay-TV will offer primarily "box office" programs, that is, programs that appeal to fairly large audiences who would be willing to pay high prices for live attendance at these events.

To date the vast majority of pay-TV programming has centered around movies, but over time programming can be expected to become more specialized, appealing to individualized markets such as, for example, opera lovers or people with an interest in science documentaries. These markets may not be large enough in numbers to warrant specialized programming on the current advertiser-supported television system, but pay-TV will be able to offer such programming if these well-defined markets have a demand sufficient to generate enough revenues from viewers to pay for the programming.

(Reasons for why pay-TV would be able to expand viewer choice will be discussed further on in this chapter.) Also, over time, technological innovations, larger subscriber lists and the achievement of scale economies are likely to allow pay-TV to offer more of these "marginal" programs.

Industry Structure

The pay-TV industry can be separated into two major groups. One group is the network entity, which acquires, packages and distributes the programming. The second major group is the exhibitors, who are responsible for "delivering" the program packages. In Canada the exhibitors are composed primarily of the cable companies. In many cases both of these functions are filled within one company, usually an existing cable company.

The functions of the network entity are many, although, as stated above, it is essentially responsible for acquiring, packaging and distributing programming. The acquiring of programs includes the actual financing and production of some programming, although the network usually acts as a middleman between program producers and the exhibitors. The packaging of programming includes the scheduling of programs for local broadcast stations, and thus involves an evaluation of programs and consumer attitudes and response. The distribution of programming also includes the marketing function. In addition, the network may participate in the management processes of both producers and exhibitors.

History of the Industry

Pay-TV has received much attention and publicity over the years, and has been technically feasible since the early 1950's.

But a combination of factors — government regulations, difficulty in obtaining programming, an industry reluctance to invest heavily in research and development, consumer disinterest, opposition by broadcasters and others, and poor economic conditions — have succeeded in keeping the industry from blossoming as initially envisioned. The situations in which pay-TV systems have been implemented, both on cable and over-the-air stations, have been relatively small in size and primarily experimental in nature; and, financially, these attempts have been by and large unsuccessful in establishing pay-TV as a viable system.

Pay-TV was attempted as early as 1951 in Chicago, and in 1953 a pay-TV system was implemented in Palm Springs, California; both experienced little success because of inadequate audience support. In the late 1950's another unsuccessful experiment was tried in Oklahoma, an experiment which attracted much attention at the time to pay-TV and its potential. The programming in the Oklahoma experiment was confined solely to motion pictures.

In 1960 one of the largest pay-TV systems to date was introduced in Etobicoke, a suburb of Toronto, providing subscribers with three channels and a choice of types of programming. The system was a pioneer in leased cables. Operations of the Etobicoke system closed in 1965 because of poor sales. During its period of operation it was discovered that current movies and sports were the most popular programs, and the use of pay-TV generally appealed to "selective" tastes, resulting in no readily discernible adverse effects on commercial television viewing (although revenues per subscriber were considerably lower than had been anticipated).[10]

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[10] W. Qual and L. Martin, Broadcasting Management (New York: Hastings House, 1968), p. 410

Perhaps the most famous pay-TV system was implemented in 1962 in Hartford, Connecticut as a planned seven-year experiment. Its purpose was to offer high quality programs which were not available on free-TV. It was suggested that the financial failure of the experiment can be attributed to the fact that less cultural programming and more general entertainment was offered than had been expected (movies accounted for approximately 86.5% of the programs offered). A wealth of data flowed from the Hartford experiment.

In recent years pay-TV systems have been springing up all over the U.S. and Canada. As of June, 1976, one source has estimated that 253 cable systems in the U.S. provided 766,000 subscribers extra programming for which an additional fee was charged on top of the regular cable charges.[11] One of the primary causes of this increase appears to be the improved programming.

In Canada, three of the largest cable companies (National, Canadian Cablesystems Ltd., and Rogers Cable TV Ltd.) recently formed the PTN Pay Television Network. This consortium of cablecasters was organized because of a realization of the potentialities of pay-TV, and their goal is to establish control over the production and distribution of pay-TV. Their stated objective is to "bring together cable companies, broadcasters, independent producers and other members of the program production community to discuss and plan the most effective approach to introducing pay television in Canada."[12]

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[11] CRTC, COMMENTS: Pay Television, "A Report on Pay Television in the U.S.A.", Comment #76 by Paul Hagon and Associates, p.22 .

[12] CRTC, COMMENTS: Pay Television, Comment #28 by PTN Pay Television Network, p. 2 .

Stage In Development

In determining regulatory policies, the stage in an industry's life-cycle should be taken into consideration. As an industry changes and matures, the optimal regulatory policy for it will also change. William Shepherd has developed a "utility life-cycle" that is useful in analyzing an industry's stage in development.[13] Shepherd defines a regulated utility as a system which provides services to a spectrum of users whose levels and elasticities of demand usually vary significantly. The life-cycle involves four stages through which most utilities pass:

Stage 1: usually a brief but decisive stage for the system, often leading to control by patents.

Examples:	Railways	(1820 - 35)
	Electricity	(1870 - 85)
	Airlines	(1920 - 25)
	Cable-TV	(1950 - 55)

Stage 2: a system of creation and growth; cross-subsidies among users and a separation of creamy and skim markets becomes embedded in the price structure; the service seeks regulated status for permanence, legitimacy and market control, and the regulatory act as a promoter of the service.

Examples:	Railways	(1820 - 80)
	Electricity	(1885 - 1960)
	Airlines	(1925 - 66)
	Cable-TV	(1955 -)

Stage 3: the system becomes complete in terms of technology and market saturation; a defensive system is adopted; competing new technologies arise, beyond the utility's control; physical layout and pricing structure do not fit evolving city patterns as well as before; users in lucrative markets challenge the prices they face; the utility more and more finds itself trying to obstruct new technology or find ways to fit it into its private optimum structure.

Examples:	Electricity	(1960 -)
	Airlines	(1965 -)

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[13] W.G. Shepherd and T.G. Gies, eds., Regulation in Further Perspective (Cambridge, Mass.: Ballinger Publishing Co., 1974), p. 6 - 7. The characteristics of the various stages have been constructed through observation of a number of regulated industries.

Stage 4: the systemic monopoly yields to these pressures of competition and technology, and reverts to conventional competitive processes.

Examples: Railways (passenger) (1935 -)

According to Shepherd, regulation is introduced in most industries in stage 2, after profit expectations and rate levels and structure have been established. Thus, so as not to upset industry balance, regulation "harmonizes" with the interests of the utility and its larger industrial customers, and its primary effect is to legitimize and to smooth out the interest-group conflicts. As Shepherd points out, the rate structure is never thoroughly assessed and changed, and thus regulation introduced at this stage is often not directly aimed at protecting the best interests of the general population.

For this reason regulation of pay-TV will be most beneficial to society if it is implemented now in the early stages of the industry's development:

> ...if action is not taken now to develop a nationally coordinated service, with high-quality Canadian content, we run the risk of ending up with many independent systems that would fail to achieve the objectives now set forth for pay television. But if we can quickly work towards a single national network, pay television has the potential of achieving many valuable results.[14]

It took about ten years of cable development (1960 - 70) before the Canadian government recognized the need for, and acted to formulate a national policy for Canadian cable operations, and the result has been costly to the Canadian economy and the cable industry. Many of the problems and headaches being experienced now could have been avoided by the introduction of a national policy in the early stages of the industry's development.

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[14] CRTC, COMMENTS: Pay Television, Comment #28 by PTN Pay Television Network, p. 2 .

√

According to Shepherd's classification, the pay-TV industry in Canada is still in stage 1, but it appears to be on the verge of a prominent growth which will take it into further stages of development. Referring to the detailed analysis of consumer demand for pay-TV by the Stanford Research Institute, Table 2. gives the upper-bound growth projection for pay-TV subscribership and revenues in the U.S. which was estimated.

TABLE 2.

PROJECTED UPPER-BOUND ON PAY-TV GROWTH

	End of Year				
	1974	1977	1979	1982	1985
Subscribers (millions of households)					
Pay-cable	0.1	1.6	5.2	12.1	14.7
Subscription-TV	0.0	0.5	1.8	3.3	1.5
Total	0.1	2.1	7.0	15.4	16.2
Revenues ($ millions)	8	249	821	1,708	1,903

Source: Stanford Research Institute, Analysis of Consumer Demand For Pay Television (Final Report), prepared for: Office of Telecommunications Policy (May, 1975), p. 101.

For 1977, the upper-bound on subscribership is 2.1 million households for a joint pay-cable cable-STV industry, with revenues of about $249 million. By 1985, U.S. subscribership is projected to grow to about 16 million households with revenues of approximately $1.9 billion.

Some of the potential of pay-TV is reflected in the growing predominance of cable systems in our society. The prospects for pay-TV have brightened over the last several years with the rapid growth of cable distribution systems for homes, apartments, and hotels. In Canada almost three million households received cable by 1976.[15]

On the other side of the picture, the projected growth and prominence of pay-TV may not necessarily be fully realized even in the absence of restrictive regulation. While it is easy to be optimistic about the industry, one must be careful to realistically assess its past performance and future potential. After all, the concept of pay-TV has been around for over two decades, but yet it has not flourished to any great extent as an industry to date.

Despite all the reasons provided by industry enthusiasts for why the industry has not flourished, in the end analysis the biggest reason has been lack of consumer acceptance. Consumers, in areas where pay-TV has been offered, have not been breaking down the doors of pay-TV companies to get their services; if they were it is likely that the industry would have somehow solved all the other problems facing them.(If a demand or market exists, the business world usually will find some way to meet that demand.)

Some possible explanations for the rather anemic consumer acceptance of pay-TV include: 1) although pay-TV has the ability to provide programming more closely correlated with consumer preferences, it has not done so to any great degree as programming has been rather narrow in scope; 2) consumers are reluctant to pay for a type of product they perceive to be available for free; 3) viewers are content with existing television programming, so that payment for additional programming is not attractive to them; 4) most pay-TV programming has been offered on a per-channel basis.

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[15] Canada Dept. of Communications, 1975 - 1976 Annual Report.

There may be other explanations for the consumer disinterest in pay-TV, but an analysis of the current demand or market for television services is not included in this paper. All that will be said is that the eventual success or failure of pay-TV will depend on the extent to which consumers are willing to pay for programs not available from the current advertiser-supported television system.

In conclusion, pay-TV is likely to eventually become a regular service of some magnitude in Canada, and thus it is an issue which should be considered now so the appropriate regulatory policy can be developed before the industry becomes established in basic structure.

The Political Reaction to Pay-TV

The political debate over pay-TV in past years has been quite extensive although very inconclusive in large part. In separating out the various issues at hand one has to be aware of the self-interests of the various groups concerned in the debate. Arrayed against the efforts of pay-TV systems to become established have been the businesses or entities who are threatened by pay-TV — primarily over-the-air broadcasters and theatre owners.

Over-the-air broadcasters are those most concerned about pay-TV and the threat it offers in luring away part of their viewing audience. More will be said on this matter in Chapter III.

Similarly, theatre owners are concerned with the potential loss of patrons to pay-TV systems. Pay-TV can not only compete with theatre owners by offering a lower price to view movies (because larger audiences can be reached), but pay-TV can also be more physically convenient.

Pay-TV is attractive to that group of people who "don't care for the time and money it takes to get a babysitter, get dressed up, drive to a theatre, pay to park and get into the theatre."[16] A pay-TV system provides a safe and convenient means of viewing a new movie or other major entertainment event.

Also, pay-TV further threatens movie theatres by competing with them for a limited number of quality motion pictures. Thus, unless the emergence of pay-TV results in a significant increase in the amount of movies produced, prices paid for the rights to exhibit movies are likely to be bid up.

On the other hand, it has been suggested by some that movie theatres will not suffer as much as is sometimes claimed. The potential audience for pay-TV may be very different from that of the present movie-going audience, and new and different types of movies will be produced and shown on pay-TV.

Also, as the Motion Picture Theatre Associations of Canada themselves have stated in their submission to the CRTC, the motion picture distributors are currently not looking to use pay-TV to replace theatres as the primary medium for their films, but rather they are looking at pay-TV as a supplementary source of income before selling a film to free-TV.[17] It appears that the policy of the major film suppliers concerning pay-TV is to release a film approximately eight to twelve months after the initial theatre release. Whether film suppliers will in fact be able to ignore any bids by pay-TV firms for new movies will depend on their ability to use any market power they have to induce non-competitive behavior — some sort of collusion amongst suppliers along with entry barriers to the industry would be needed to make such a policy effective.

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[16] A. Rimberg, "Pay-TV May Hold Key to Cable-TV's Future in Vast Urban Market," Wall Street Journal, (17 May 1973).

[17] CRTC, COMMENTS: Pay Television, Comment #26 by Motion Picture Theatre Associations of Canada, p. 1.

For these reasons and others, pay television has encountered tremendous opposition in North America, particularly by broadcasters and theatre owners who have been continuously pressing for legislation to severely restrict or even entirely prohibit pay-TV.[18] It is only natural that these groups are interested in their own self-preservation and growth.

Because of this strong opposition, pay-TV, if it ever does emerge, will almost certainly spring up alongside the present advertiser-supported television system. Political interests will be sure to maintain the present existing networks. The government usually sees its role as to come to some sort of a political compromise and balance out the conflicting interests of the major groups involved:

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[18] It should be noted that the various owners of media groups are not wholly against pay-TV. Possibly because of the perceived potential threat of pay-TV and cable systems in general, the various media have invested heavily in cable operations. Industry statistics for 1974 reveal the interesting fact that media groups held partial ownership in approximately three-fourths of all U.S. cable companies: broadcast related ownership in 33% of cable systems, program producers in 25%, newspapers in 15%, publishing companies in 7% and theatre owners in 4% of cable operations. See: "A Short Course in Cable, 1974", Broadcasting (Apr. 22, 1974), 23; and "A Short Course in Cable, 1975", Broadcasting (Apr. 14, 1975), 56.

> ...we must take care that pay television is introduced in an orderly and controlled fashion. We must ensure that it brings maximum benefit on a national plane to all the groups interested in broadcasting — private and public broadcasters, cable operators, program producers, actors, writers, and most of all, the Canadian public.[19]

It is true that any regulation policy involving pay-TV should be developed within the framework of the entire broadcasting industry and not in isolation. Pay-TV exists in the wider context of the communications system, and is not independent of the existing structures, and thus integration of pay-TV into a national framework of broadcasting policies and regulation is needed to maintain direction and balance within the broadcasting system.

However, the public has a large interest in pay-TV also because of its effect on the quantity, quality, and expense of television programming, and this interest should have considerable weight in determining regulatory policies. Even through pay-TV may be "bad" for some interest groups, it may be good for society as a whole in the long-run, and thus the industry should be analyzed in all respects in an attempt to determine how, in the best interests of the whole of society, the industry should be regulated if indeed it should be regulated at all.

Unlike the U.S. situation where hearings by the Federal Communications Commission (FCC) on pay-TV began as early as 1955, the Canadian political reaction to pay-TV has been concentrated into the last few years, as it is only recently that pay-TV has threatened to become prominent and established as a major industry in Canada.

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[19] Canada, Dept. of Communications, "Pay Television", Notes For a Speech: By the Honourable Jeanne Sauve, p. 2

Realization of the inevitability of pay-TV and the concern by government officials over its impact on over-the-air broadcasting, general social patterns, and the television and film industry, led the Canadian Radio - Television and Telecommunications Commission (CRTC) in 1976 to invite interested groups to submit briefs commenting on government regulation of pay-TV and the introduction of a pay-TV system in Canada. (Under the Broadcasting Act the CRTC has been given the right to make all federal broadcasting policies about non-technical matters, although the debate over pay-TV has involved jurisdictional problems between the federal and provincial governments.)

A total of 140 submissions were received by the Commission, with the majority being strongly opposed to pay-TV. Among those opposed were the Canadian Conference on Arts and the two major broadcasting networks in Canada. The cablecasters felt pay-TV should be allowed to operate as a network whose programming is distributed on cable, but under regulation of profits.

The view which emerged from the government in 1976 appears to be that they feel pay-TV should be run on a "non-profit" basis.[20] The rationale for this, however, has not been explicitly given. There is no clear economic reason why the pay-TV industry should be regulated on a "non-profit" basis.

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[20] "Cable Industry Reacts Favorably to Comments on Pay Television," Globe and Mail, 13 November 1976, p. B2.

Also, it is not clear whether the government intends the non-profit criterion to be applied also to the cable companies involved in delivering pay-TV program packages as well as the group or network entity responsible for acquiring and packaging the programming. (Apparently the cable industry has, quite naturally, interpreted the government position as only applying to the network entities.[21]) It is also unclear as to what form the government feels regulation should take so as to ensure that excess profits are not earned.

If the rate of return for the industry is regulated, for political reasons, consideration should be given for the stage in development of the industry. Because pay-TV is in the initial stages of expansion and development, allowance should be made so that the rate of return is high enough to attract the necessary capital needed for growth. There is still a relatively high degree of risk associated with the acceptance and operation of pay-TV, and the allowable rate of return will have to be set so that it will attract sufficient funds for the considerable investment needed.

The Federal government is attempting to form a regulatory policy for the pay-TV industry that will incorporate three major objectives. Canada's Minister of Communications, Jeanne Sauve, outlined these three objectives in a speech given to the Canadian Cable Television Association in 1976:[22]

1. pay-TV should be regulated so that it provides programming that is not currently being offered by broadcasters

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[21] Ibid.

[22] Canada, Dept. of Communications, "Pay Television," p. 6 - 7.

2. the production of popular and "high-quality" Canadian programs must be ensured

3. regulation must ensure that programs are produced in Canada for international sale

As far as the first objective is concerned, it appears that it is more of a means to an end rather than a goal or objective itself. More will be said on the rationale behind this "objective" later on. The second objective, a requirement specifically stipulated in The Broadcasting Act which governs the broadcasting system in Canada, is likewise a little ambiguous for it is not clear what is meant by "high-quality" Canadian programs. Also, the question arises that if regulation is needed to ensure the production of "high-quality" programs, then why should these programs be produced in Canada if there is insufficient demand for them? (Would they not be produced without regulation if there was a sufficient demand for them?) Regulation should not be needed to achieve the third objective if the second objective is achieved; the international sale of programs will only occur if "high-quality" Canadian programs are produced.

To achieve these objectives three general options have been proposed. The first option involves individual licensees, the traditional form of regulation in the broadcasting industry. However, if no additional regulation is enacted other than licensees, this option may lead pay-TV into the same situation in which the Canadian motion picture industry now finds itself where foreign interests have acquired a virtual monopoly over exhibition and distribution, and control over the financial resources needed for production. Because a Canadian program distributor currently does not exit, the individual licensees could be forced to deal with foreign distributors thus opening the way for foreign organizations to extract supernormal profits from the industry. Foreign control of exhibition and distribution would also make it difficult for Canadian producers to obtain exhibition opportunities.

A second option which may circumvent this problem involves the formation of a consortium of cable and broadcasting operators. This possibility has some merit, although steps would have to be taken to ensure that the participating parties do not abuse their position and power in pursuing their own vested interests. The possibility also exists of the government becoming a participant in the consortium.

The third option, an option the government appears to favour, is the establishment of a national pay-TV distributor or network, owned and operated independently from existing cable interests. All licenses to deliver or exhibit pay-TV programming in Canada would be given only under the condition that programs be obtained from this network. This network could either be made a private corporation with extensive monopoly powers, a public corporation, or some mixture of the two. Some type of regulation of the network would be necessary to ensure it doesn't use its monopolistic position to extract monopoly rents from pay-TV exhibitors.

Such a pay-TV network could act as a Canadian program distributor which would considerably strengthen the Canadian program production industry. This option is favoured by the government primarily because it would enhance the production, exhibition, and promotion of Canadian programs. Section 3(d) of The Broadcasting Act requires the broadcasting system to use "predominantly Canadian creative and other resources".

In determining the form which regulation should take, one of the important issues involves whom the network entity should be comprised of and whether the network should be made a public corporation or left as a private entity but given extensive monopoly powers.

Because pay-TV is a new component of the broadcasting system, the necessary skills and experience for successful operation do not reside with any one member of the present system, and thus it may be desirable to bring together in the pay-TV network members from the various parts of the total program and broadcasting system. Pay-TV will require unique programming, promotion, and distribution skills.

Also, despite government intentions to set up a network owned and operated independently from existing cable interests, it may be desirable to allow the cablecasters to have a major position in determining network operations, since cable-delivery is the most feasible form of delivery for pay television. The rationale behind this is so as to not risk damaging the relationships with existing cable customers, and also to avoid losing some of the considerable capital investment required to introduce pay-TV.[23]

As far as the issue of public or private control is concerned, it appears that our society favors public sector control only if private sector control is not feasible. This is desirable not only on ethical grounds, but government ownership and control generally involves more bureaucratic and administrative costs and entanglements, as well as some loss of initiative and creativity. The role of government regulation should not be to replace the market mechanism unless the market cannot perform desirably.

The alternative to the formation of a national network is to allow for a number of individual networks or programmers that would compete against each other to obtain leases from cable operators to deliver their programming to viewers. Here the separation of the program distributor or network from the cable operators is a more important issue.

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[23] PTN estimates it may take over $34 million in additional equipment for it to initiate pay-TV service over cable; see CRTC COMMENTS: Pay Television, Comment #28 by PTN Pay Television Network, p. 111 - 5.

Pay-TV and Program Variety

It appears at this point in time that the Canadian government favors a regulatory policy which would considerably restrict the growth and development of the pay-TV industry. Yet the pay-TV industry has some very desirable characteristics when compared to the present "free" television system. This section will expand on one of these desirable characteristics — namely, the ability of pay-TV to better satisfy consumer wants by offering television viewers a programming mix that more accurately corresponds to their preferences.

Explanation of Current Program Uniformity

The massive potential for pay-TV as an entertainment medium is based partially on the need for greater selectivity of entertainment for the North American population, a diversity that is not currently being offered by the TV networks.[24] This increasing demand is being generated by an expanding population along with the growing affluence of the average consumer (entertainment has a relatively high income elasticity). Also, consumers today have greater amounts of leisure time available to them.

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[24] Support for this viewpoint of a growing gap between audience expectations and TV performance can be found in a major study by the broadcast consulting firm of McHugh & Hoffman. The results of this research are reported in "The viewer's ahead of the medium," Broadcasting (6 June 1977); 35 - 36. The research report claims that: "During the last 10 years, the failure of the TV programers to stay in step with the audience's maturation and to remain sensitive to the societal force and functions of the medium, has caused a serious 'loosening' of the audience commitment to the medium."

Currently, the existing advertiser-supported television system provides a high degree of program uniformity by most standards. Instead of offering a great variety of programs appealing to a wide range of tastes, the current mix of programming involves a high degree of program duplication aimed at the mass audience. Pervasive throughout the literature on boradcasting is the charge that television provides excessive mass appeal programming at the expense of failing to satisfy minority tastes.

Only a casual glance at any current TV program listing is needed to appreciate the amount of duplication involved in the conventional free TV system. For example, in one randomly chosen week for the city of Edmonton, with six channels available to viewers (three broadcast and three cable), 23 different detective shows were offered 43 times, and 23 different game-shows were offered 101 times (see Appendix A).

If a significant demand does in fact exist for more diversity in television programming, then what is the reason for the current high degree of uniformity? After all, television broadcasters are interested in maximizing audience size which determines profit levels through advertising rates.

The broadcasters themselves argue that television program homogeniety is a result of a lack of sufficient demand for other types of productions (however, demand is only in the sense of numbers of people willing to watch a program at a zero price). They claim that more diversity would be offered if there were identifiable minorities with distinct preferences.

Since too much program homogeneity cannot be explained away by the behavioral motivation of broadcasters, the reasons for excessive program duplication lie elsewhere. Excessive duplication can perhaps be explained by either institutional or technological reasons.

In trying to explain product homogeneity traditional economic analysis is not of much help. Standard economic theory has not yet developed a comprehensive framework to explain product variety and quality choices by firms. Economic theory can explain quantity decisions for fixed quality levels of a given product, but in the real world firms often have to decide simultaneously on what to produce, of what quality, and of what quantity.

On a conceptual level perhaps the best way to approach the problem is via the "characteristics" approach. To begin with, potential product variety is enormous. If a firm is defined as a decision making unit — the decision being whether to produce or not produce a product — it can be seen that the number of "firms" in the economy will exceed the number of real firms (firms with actual physical assets). Some firms will not be in physical existence because they have chosen not to produce. And, since each of these "firms" may consider a large number of products and whether or not to produce them, the potential number of products which might be produced is indeed very large.

However, there are limiting factors to the number of goods actually produced and the different degrees of differentiation of each product. Because of cost constraints imposed by scarce resources, the size of the possible production set is limited (a choice has to be made as to what to produce).

In addition, a further limiting factor is the needs and wants of consumers. Assuming that a firm cannot create or manipulate needs and wants in consumers, the number and types of needs of consumers not only limits the number of possible goods to produce (needs being reflected in demand), but the intensity of needs makes some goods more worthwhile to produce than others. In other words, needs provide a further restriction on what types of products will be most pofitable for firms to produce under their cost constraints.

One general approach to the issue of product variety which incorporates both of these limiting factors in determining quality and quantity output levels is the "characteristics" approach which was initially developed by Lancaster.[25] This approach treats goods as bundles of "characteristics"; the goods themselves are not assumed to directly provide utility to the consumer, but rather they provide basic characteristics which satisfy consumer needs.

However, in regards to television programming, it is difficult to determine what the actual "characteristics" are of programming from which viewers derive utility. One cannot use general characteristics such as "information" or "entertainment" because one of the crucial assumptions of the characteristics approach as it has been developed is that the characteristics possessed by a product are the same for all consumers and are consumed in the same quantities. This assumption would not be very descriptive of television programming where for example, sports fans will derive more "entertainment" from watching a particular football game than a person who has no interest in sports. Almost all of the utility derived from viewing television comes via psychic satisfaction, and thus a large degree of personal subjectiveness is involved, and this is not compatible with the underlying assumptions of the characteristic approach to product variety. Thus, the usefulness of using the characteristics approach to explain television program variety is very limited.

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[25] K. Lancaster, "A New Approach to Consumer Theory", Journal of Political Economy, (April 1966): 132 - 57.

Since it is difficult to implement a general framework for evaluating industrial decisions concerning product variety, a less systematic approach is used here to explain the phenomenon of program uniformity. Various hypotheses will be forwarded to explain program duplication.

One possible explanation of program uniformity arises if one is willing to make two behavioral assumptions concerning viewers and broadcasters. Steiner initially produced the argument that if you combine the assumption that individuals will only view their preferred program type, and if this preferred program type is not available then the individual will choose not to view any program, with the assumption that television stations will seek to maximize audience size, a station in determining its programming may find it more profitable to duplicate existing popular programming and share the current audience rather than to program so as to try to attract previously unserved viewers.[26] The factor which will determine whether it will be more profitable to do so is the particular distribution of preferences amongst viewers.

A simple example can illustrate this point. Assume 75% of the viewing public have detective shows as their first and only choice, and that of the remaining viewers 15% prefer science documentaries and 10% prefer roller derby. If three television stations are in operation, for any single time period all three broadcasters will choose to offer detective shows which, if the audience for any particular type of program is shared equally among the broadcasters showing it, will still give them a larger viewing audience (25%) than if they were the only ones to offer science documentaries or roller derbies.

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[26] P. Steiner, "Program Patterns and Preferences and the Workability of Competition in Radio Broadcasting," The Quarterly Journal of Economics LXVI (May 1952): 194 - 223.

Thus, a large degree of homogeneity in tastes amongst consumers and a small number of competing broadcasters is likely to lead to duplication of television programming in an advertiser-supported system. Minority preferences will tend to be ignored in favor of majority preferences. Since viewing time and the number of available channels is limited, the maximization of audience size is likely to occur when the bulk of programming is aimed at the mass audience.

The important question, however, is whether this is one of the major explanations of current program uniformity. Does a large degree of homogeneity in tastes exist amongst consumers and does this lead to programming which caters to the tastes of the majority to the exclusion of minority preferences?

Even if you remove the assumption of viewers watching only their preferred choices, the argument may still be valid. Even if people will, in general, watch their second or third choice if their first is not available, it still may be more profitable to duplicate existing programming as existing programming may be viewed by people who rate it as their second or third choice. However, if you do allow second or third choices the results will be more uncertain as behavior will now depend on such factors as how much the available program alternatives can differ from a viewer's first choice before he will become a non-viewer. A model of viewing behavior is need to analyze the problem.

J. Beebe has developed a computer model of profit-maximizing advertiser-supported broadcasting which allows for lesser preferred program substitutes by varying the distribution of viewer tastes and by considering the implications of preference intensities.[27] He also varies within the model the assumptions made for program costs and channel capacity. By assuming discrete program types and particular viewer preference sets, the predicted program patterns generally reveal competitive tendencies toward program duplication and imitation.[28]

So far we have just considered a one-period model. In a multi-period analysis allowance has to be made for the fact that viewer preferences for program types are likely to change over successive periods once that program type has been offered. Also, those people whose first choice isn't initially offered may form a large enough market that it may be profitable to devote some portion of the programming towards their tastes after the popular programming has been offered (although it is likely that their individual preferences are relatively dispersed, thus making it difficult to cater to all minority preferences).

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[27] J. Beebe, "Institutional Structure and Program Choices in Television Markets," The Quarterly Journal of Economics 91 (February 1977): 15 - 37.

[28] Ibid., p. 26 However, if one of the assumptions made by Beebe — that all channels simultaneously offering the same program type share equally in the program's total audience — was altered so that duplication of an existing program type would initially receive a smaller proportion of the audience than the existing program (a reasonable assumption), then the tendency towards duplication would not be as great.

These additional factors greatly complicate the problem and make it more difficult to explain program uniformity or diversity over a multi-time period. A multi-period model, however, is likely to predict more diversified programming than a single-period model.

An alternative explanation of program uniformity as set forth by Leonard Ross is that it is essentially a result of the oligopolistic nature of the current TV system. The dominance of the networks in the production and selection of programs tends to:

> ...restrict the entry of truly independent producers and insulate the networks' narrow perception of public taste against outside influence. Indeed, the very existence of networks is also held to preclude access of local and innovative programming.[29]

In a study of program duplication in the U.S., Hall and Batlivala discovered that most of the observed duplication was in fact network in origin.[30] Many people in the television industry feel that commercial television programming is the product of the caution and conservatism of the broadcast and advertising corporations, and not of the viewing audience.

Another related explanation for program uniformity stems from the inability of programmers to accurately discern the wants and preferences of the viewing public:

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[29] Leonard Ross, Economic and Legal Foundations of Cable Television, A Sage Research Paper, (Beverly Hills: Sage Publications, 1974), p. 8.

[30] W. Hall and B. Batlivala, "Market Structure and Duplication in TV Broadcasting," Land Economics 47 (November 1971): 405 - 10.

> Programming is anything but an exact science, and the networks are constantly being surprised by the popular acceptance of show X over show Y. Within the commercial complex, the only formula for success is the imitation of an existing successful program. The occasional breakaway success in a new season always represents a departure until imitation turns it into a standard formula.[31]

Due to the risks involved, there may be a greater tendency towards program duplication than is warranted by consumer tastes.

Another reason why the current television system is failing to provide more optimal degrees of program variety, is that only one of the dimensions of demand is predominant in influencing program choice by broadcasters. The following section has more to say on this important factor.

Why Pay-TV Can Offer a Greater Variety in Television Programming

The actual degree to which pay-TV will offer consumers a more diversified menu in television programming is an extremely important factor in developing regulatory policies which will affect the growth and viability of pay-TV. If, in the long run, only minor changes in programming will occur because of pay-TV, the case for pay-TV is considerably weakened.

There are three basic reasons why pay-TV is able to offer programming that would not normally be shown on a conventional "free" TV system, and thus help satisfy some of the need for greater selectivity in television entertainment. The first and most important reason stems from the fact that a pay-TV system can more accurately reflect consumer preferences than free television because a pay-TV system allows the magnitude or intensity of viewer preferences to be registered in addition to their direction. Because positive prices allow pay-TV to incorporate another dimension of audience demand — namely, demand intensity — some programs might be offered that could not otherwise be provided. J. Minasian explains:

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[31] R.O. Moore, "Public Television Programming and the Future: A Radical Approach," in The Future of Public Broadcasting, eds. D. Cater and M. Nyhan (New York: Praeger Publishers, 1976), p. 244 - 45.

> ...in an advertising-supported system...the program results reflect an all-or-nothing type of voting since votes take weights of either one (viewer) or zero (nonviewer). In contrast, a subscription system allows proportional representation, since votes take different weights (different prices paid for different kinds of programs) and reveal the voters' subjective evaluations of the program. Therefore, a subscription system can be expected to yield a more diversified program menu than an advertising system, because the former enables individuals, by concentrating their dollar votes, to overcome the 'unpopularity' of their tastes.[32]

A weighted voting system is more accurate in revealing consumer preferences than a purely directional voting system, and individual program prices would allow pay-TV to achieve such a weighted voting system. In addition to audience size, preference intensities as reflected in the shape of demand curves (the responsiveness of audience size to price variations) would influence the programming mix.[33]

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[32] Jora Minasian, "Television Pricing and the Theory of Public Goods," Journal of Law and Economics 7 (October 1964): 75.

[33] However, the charging of a single positive price would not allow for the registry of the preferences of consumers who would be willing to purchase the rights to view a program at a lower positive price than the one charged — the optimum registry of preferences could only occur through perfect price discrimination.

The type of programs offered by pay-TV that would not be shown on free-TV would tend to be those which are relatively more expensive to produce and those with relatively low price elasticities (where higher prices would do less to discourage consumers from viewing).[34] What type of programs have low elasticities is an important empirical question. The growth of pay-TV over the next several years should generate sufficient data to allow empirical measurement of program elasticities.

Because of the ability of a pay-TV system to charge a positive price, relatively expensive programs whose markets are not large enough in numbers to warrant the programs on an advertiser-financed TV system may be offered by pay television if the market has a demand whose elasticity is such that it can generate sufficient revenues to pay for the programming — resulting in a direct gain to viewers.

There is good reason to believe that revenues raised from a pay-TV system can exceed potential revenues from advertisers in many cases allowing for the production of some programs which would be too expensive to be produced in an advertiser-supported television system. Advertising revenues in the free television system depend on both the amount of advertising time available and the rates paid by advertisers per unit of advertising time. Because advertising time has technical limits and advertising rates are limited by competition with other advertising media, total revenues are limited to some amount which appears to be much less than the value of television programming to consumers.[35]

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[34] However, as will be seen in Chapter III, pay-TV does have some bias away from the optimum which involves programs with low price elasticicities, although the bias is less than that associated with a free-TV system, this bias could only be removed through perfect price discrimination amongst all potential viewers.

A pay-TV system, however, because it can charge a direct positive price to consumers for programs, can raise revenues which more nearly approach the value of programming to consumers (as will be discussed in Chapter III) and which exceed the limit for revenues generated by free TV by a seemingly considerable amount. Consider the following argument involving the U.S. television system:

> ...programs which are currently discarded may have had as many as 15 - 20 million viewers. Network programs do not become 'profitable' before passing the 20 million mark, and popular shows command 30-50 million viewers, according to the rating services. A nonpopular show by current standards, if viewers are willing to pay a quarter on subscription television, needs an audience of less than a million to compete with a current show with 30 million viewers on advertising-supported television.[36]

In other words, a small charge[37] for a program to the same free TV audience would allow a pay-TV system to generate considerably more revenues than could be attained in the advertiser-supported television system, and thus shows that would normally be too expensive to produce may become profitable. Of course, price elasticity is an important factor in the amount of additional revenues a pay-TV system can generate as a

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[35] Noll, Peck and McGowan come to this conclusion based on several different types of evidence; see Noll, Peck and McGowan, Economic Aspects of Television Regulation, p. 22 - 23 and 30 - 32.

[36] Minasian, p. 75 - 76.

[37] A "small" charge may indeed be small. Minasian has this to say about the revenues per family received from popular programs: "One of the networks supplied me with data on the total revenues generated by two successful one-hour programs in the 1964 - 65 season...Revenues generated per family were 1.8 cents (less than a penny per viewer) and 3 cents (slightly more than one penny per viewer)." For Canada, in 1965, Table 3 provides data on the amount paid for a one-minute television advertising message per individual home which actually viewed television at a particular time period (as proven by surveys):

TABLE 3

COST OF TELEVISION ADVERTISING, C.B.C. AND PRIVATE STATIONS, SIX MAJOR CANADIAN CITIES, FALL 1965

City	Call Letters	Cost Per Home (¢)	Call Letters	Cost Per Home (¢)
Halifax	CBHT	.275	CJCH	.358
Montreal	CBMT	.400	CFCF	.412
Ottawa	CBOT	.329	CJOM	.476
Toronto	CBLT	.263	CFTO	.449
Winnipeg	CBWT	.419	CJAY	.454
Vancouver	CBVT	.353	CJAN	.535
Six Cities Average		.340		.447

Average Cost Per Hour
.340 ¢/min. x 12 min. = 4.08¢
.447 ¢/min. x 12 min. = 5.36¢

Source: O.J. Firestone, Broadcast Advertising in Canada: Past and Future Growth (Ottawa: University of Ottawa Press, 1966): p. 112, Table 2-1.

Since the maximum amount of advertising time per hour is 12 minutes, the average maximum revenues per family for any program is 4.08 cents for the CBC stations and 5.36 cents for the private stations.

positive price will attract a smaller audience than if offered at a zero price, assuming television programs are normal goods. However, because it is reasonable to expect that viewers would subscribe for programs at a higher price than a few pennies per family which reflects a corresponding amount of advertiser expenditures, more resources can be expected to be drawn into the industry and thus result in a more diversified mix of programming.

In a pay-TV system the nature of programming is determined primarily by consumer demand for television programming rather than primarily according to the productivity of advertisements. The only way in which the two systems would result in the same resource allocation in programming would be if for every program the net revenues obtained from advertising would be exactly equal to the net revenues generated by viewer payments. Since this is very unlikely to happen, we can expect the two systems to provide a different mix in programming.

Not only do free-TV revenues fall considerably short in capturing the value of the intensity of consumer preferences, but also the one dimension of viewer preference that the free-TV system does incorporate in determining the mix of programming it offers - audience size — may be more accurately measured in a pay-TV system. Program audience size in a free-TV system cannot be measured directly and can only be estimated through the various types of television program ratings. These ratings are based on a sample of the viewing population and thus are subject to some degree of error. However, a pay-TV system would be able to directly account for each viewer because of individual payment for the different programs offered, and thus an extremely accurate measure of audience size can be obtained.

Another reason why pay-TV might possibly offer viewers increased variety in television programming is because a pay-TV system receives its revenues directly from consumers. As a result the mix of programming chosen, in the absence of regulation, is that which will maximize the profits of selling television shows to consumers, and thus programs are chosen that correspond as closely as possible to consumer preferences given the prevailing cost conditions of programs.

An advertiser-supported television system, on the other hand, receives its revenues from advertisers, and thus maximization of profits will result in a mix of programming that is different to the degree that advertising rates are based on factors other than total audience size. Advertising firms will want to sponsor those programs which correspond to the preferences of only those consumers who are likely to be persuaded by the advertised message. Thus, the preferences of some potential viewers will be partially or wholly excluded in the determination of program mix if some shows are produced so as to appeal to specific consumer audiences.

For example, if golf-balls derive great benefit from television advertising in the form of increased sales, the advertisers of golf-balls will want to sponsor a program aimed at maximizing the audience size of golfers as opposed to the audience size of the general population. Thus, even though soap operas may be more popular amongst potential viewers in terms of viewer preference, golf-shows will be offered instead of soap operas because golf-shows will attract more golfers than soap operas would. Thus, the nature of the programming offered in a free TV system depends in some degree on the mix of products being advertised.

This mechanism for determining output is not conducive to optimization of welfare for the total viewing audience. Because it is advertisers who finance the programs, it would be more accurate to say that the mix of programming chosen is that which maximizes the profits to be derived from advertising and not that programming which maximizes audience size which is often cited as the case. And the maximization of profits from advertising does not necessarily mean programs that are chosen will directly correspond to the preferences of the whole potential viewing audience, because the product that is advertised affects the type of programming offered. (However, it is true that many advertisers will attempt to only reach the general population and not a particular subset, and thus many programs will be produced so as to maximize total audience size.) In contrast, the nature of programming chosen in a pay-TV system is determined directly by the consumer demand for television programming.

A third reason for the ability of pay-TV to offer additional programming stems from the unique physical characteristics of pay-TV which allow for better exclusivity amongst viewers. For example, "adult" entertainment would be more socially acceptable on pay-TV as compared to the present free TV system because children can be much more easily excluded from viewing it.

For all of these reasons pay-TV can be expected to result in a more accurate reflection of viewer preferences, especially if a per-program charge is adopted, than current commercial television programming. Richard Moore, a television program producer, has this to say about commercial television programming:

> Programming is anything but an exact science, and the networks are constantly being surprised by the popular acceptance of show X over show Y...an audience that is paying directly for the television service would undoubtedly make itself heard.[38]

On the other hand, it should be noted that there are some who think the networks do a good job in selecting programs that are the most appealing to the general viewing audience. The actual performance of the current broadcasting system is probably somewhere in between these two extremes.

Using common sense, one might expect pay-TV to provide more diversity in programming. Pay-TV programming similar to existing programming is not likely as consumers will be reluctant to pay for the same type of programming that is already available at a zero price (unless pay-TV outbids free-TV for programs which cannot be duplicated). The following statement made by a Canadian cable operator gives support to this proposition:

> Telecable Videotron's success, without doubt, depends on its type of programming. Compare, for example, our performance with that of a system distributing only programs originating from over-the-air broadcasting stations. In two years, we have captured 48.5 percent of the metropolitan Montreal market while offering our services at a monthly rate of $8.25. Cablevision Nationale Ltee., after 25 years, has about 35 percent of this same market and its monthly rate to subscribers is $6. [39]

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[38] Moore, "Public Television Programming and the Future", p. 244-45.

[39] R. Jauvin, "A Prescription for cable TV", Insearch, The Canadian Communications Quarterly (fall 1977): 12.

In the U.S., the FCC in its Fourth Report on pay-TV, concluded on the basis of its seventeen-year inquiry into pay-TV that pay-TV would provide a "beneficial supplement" to the conventional "free" broadcasts.[40] It stated that pay-TV broadcasting "is not duplicative of the programming on free TV and that (it) is desired or needed by at least a portion of the viewing public."

Effect of Greater Variety on Consumer Welfare

Whatever the cause, a high degree of program uniformity does exist in the current television system. What has to be assessed, however, is whether an increase in program variety brought about by pay-TV will significantly increase or decrease total consumer welfare. Increased variety will certainly add to the consumer satisfaction gained from viewing television programming, but is the additional cost in terms of the use of scarce resources worth it; could these resources be used elsewhere in such a manner as to yield greater consumer satisfaction? The value of greater variety will rest on the structure of demand and costs.

One of the difficulties involved in evaluating the effect of pay-TV programming on consumer welfare is the fact that the effect of the introduction of pay-TV will be felt throughout the entire television industry, and all changes must be reckoned with. If pay-TV only offered programs that would not normally be available otherwise, it is fairly obvious that consumer welfare would increase as a result. Consumers will pay for these programs only if they add more to their total satisfaction that the purchase of any other product (assuming consumers are rational).

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[40] U.S., Federal Communications Commission, Fourth Report and Order on Subscription Television 15 FCC 2d (1968): 473, 483-88.

Thus, no television viewers would be worse off because of these programs but some would be better off.[41] These type of programs would be ones that are marginally unprofitable to the "free" broadcasting system, but are profitable to a pay-TV system because of one or more of the reasons stated in the previous section.

However, if pay-TV includes in its package of programming programs which would be available on our conventional TV system if it were not for the existence of pay-TV, the gain to consumers is no longer unambiguous and a more complicated problem exists. The "free" TV system would now be affected in its selection of programming and we can no longer assume that no viewers would be worse off because of pay-TV (some programs previously offered for free would now be offered for a positive price).

The starting point in the analysis is to evaluate whether pay-TV can be expected to provide a range of programming or supplement existing programming such that society is brought significantly closer to the socially optimal degree of program variety. Optimal variety can be viewed as being determined by two major forces — the demand side and the cost or supply side. On the demand side, more variety will be optimal the more widely distributed the tastes of consumers, and the less the substitutability between products (or, in other words, the narrower the distribution of "characteristics" amongst products). On the supply side, less variety will be optimal the greater the economies of scale in production.[42]

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[41] This statement assumes that the loss in advertising revenue resulting from the fact that some consumers will decrease their viewing of free TV because of their viewing of pay-TV programs is not sufficient to affect the programming offered on free TV. Noll, Peck and McGowan also make this assumption based on the premise that networks currently earn substantial profits and thus the resulting fall in advertising revenues can be absorbed without a major change in programming: see: Noll, Peck, and McGowan, Economic Aspects of Television Regulation, p. 36 - 37. More will be said on the probable decrease in advertising revenues in Chapter III.

As far as the distribution of tastes is concerned, pay-TV can be expected to better cater to the tastes of consumers than an advertising-supported system, as explained in the previous section. This is primarily because advertising-supported television aims its programs at the mass audience, as revenues are based almost exclusively on total audience size. Pay-TV, on the other hand, because of its ability to charge a positive price for individual programs, can exploit the tastes of consumers on the lower ends of the distribution scale and thus provide additional variety in programming that is justified on a total welfare basis. The extent of this gain in welfare will depend on the distribution of viewing preferences amongst consumers. The gain will be smaller the greater the homogeneity in tastes. As previously discussed, current program uniformity in the free TV system may be primarily the result of a narrow distribution of preferences amongst consumers.

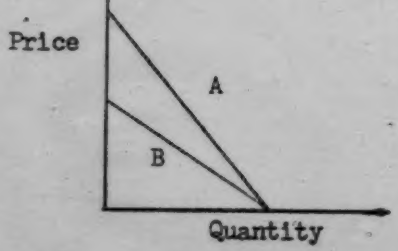
The degree of substitutability between different programs is another important factor in determining optimal variety. The value placed by consumers on variety depends on the relative amounts of satisfaction obtained from preferred and alternative choice program types. Thus, what is required is an empirical evaluation of the amount of additional satisfaction that would be gained by viewers from pay-TV programming that is different than available programming. This is difficult to empirically evaluate, although the eventual success or lack of success of pay-television will shed more light on the amount consumers are willing to pay for additional television programming.

[42] Although the economies of scale associated with the joint production of some products may result in more variety being optimal.

The structure of the television programming market is such that pay-TV can result in the provision of a quantity and quality of programming that is closer to the optimum than that programming which would be provided by a free television system. As will be discussed in more depth in Chapter III, the "optimal" quantity and quality of television programming will only be provided if broadcasting revenues are equal to the value of programming to consumers. However, there is no reason to expect advertising revenues in a free TV system to be equal to the social value of programming. Pay-TV, however, can be expected to appropriate a larger fraction of the benefits generated by a program because it obtains revenues directly from viewers by charging a positive price for programs. In such a case, producers' revenues will more nearly reflect consumers' benefits, resulting in the provision of a quantity and quality of programs that is closer to the optimum. There will be a tendency to provide programs up to the point where the cost of programming equals the real value to consumers of programming as reflected in revenues gained from consumers.

In an advertiser-supported television system the only dimension of demand that is important to producers is what the quantity demanded is at zero price. The failure to consider the slope of the demand curve over a range of positive prices may result in the provision of programming which does not maximize total welfare because the intensity of demand is not incorporated in output decisions. Figure 1 depicts the demand for two programs which would generate equal revenues with advertiser support.

FIGURE 1



While an advertiser-supported system would be indifferent between these two programs (assuming equal production costs), a pay-TV system would choose program A, the program with the more inelastic demand. Program A would generate more of both consumer and producer surplus, thus benefiting society as a whole.

One very crude way of determining whether an increase in variety will be of great benefit to consumers is to assess current dissatisfaction among viewers resulting from program uniformity. If the dissatisfaction resulting from the lack of variety is as great as it is often suggested, and viewers express this dissatisfaction by not watching television, then it could be roughly measured. And indeed if this approach is used one might conclude little dissatisfaction exists based on the tremendously large amount of time the average person spends viewing television programs.[43] However, this approach is hazardous because viewers who do not receive their preferred programs may accept existing television programming as simply better than nothing. This argument is reinforced by the fact that at a marginal cost of zero — zero in terms of dollars and not time or sanity — viewers may consume television services even if the resulting satisfaction is very low.

It is even possible that pay-TV can result in a large increase in consumer welfare even if it does not offer a substantially different programming format. Even if duplication is increased, consumers will gain from the increased options available to them. Noll, Peck and McGowan distinguish between viewing options (the number of programs available simultaneously to the viewer) and diversity (the number of categories — comedies, westerns, soap operas, etc. — in which programs are offered at a given time).[44] It is argued that viewers value more options (ie. the number of available channels) than diversity because more channels implies a larger number of differing program types and, also, programs within standard categories may not be perfect substitutes for each other and thus viewers will value more options.

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[43] Average daily television viewing per household is about 6 hours, 11 minutes in Canada; see E.S. Hallman, Broadcasting in Canada, p. 31.

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[44] Noll, Peck, and McGowan, Economic Aspects of Television Regulation, p. 8 - 10.

CHAPTER II

THE RATIONALE FOR REGULATION

The purpose of this chapter is to establish the theoretical basis for the thesis by outlining the conditions under which the government may be economically justified in regulating any particular industry.

If a market left to itself does not attain certain desirable social objectives, then the government may be justified in either replacing the market mechanism as the determinant of industrial output, or modifying the parameters of the market so as to allow for the achievement of these objectives through the functioning of the market — and each of these courses of action will have different economic and political consequences. Thus the issue of regulation boils down into two questions: 1) should the market be regulated to begin with? and 2) if it is to be regulated, how is it best regulated?

The trend in North American regulation over the years has been towards more and more government intervention in industrial markets; each passing year brings more rules and requirements which are imposed upon industry by government. Because regulation has become so prolific it is very important to develop a framework in which to evaluate the rationale for and the costs and benefits imposed by the various forms of regulation.

This thesis is mostly concerned with defining the set of conditions in an industry which might warrant government regulation from an economic standpoint, and then evaluating some of the regulatory issues involving the pay-TV industry.

Although a simple set of rules and guidelines cannot be applied to all regulatory problems, as each industry has its own unique features, valid scientific generalizations can be drawn and useful general guidelines developed. The application of these general guidelines or principles in particular situations must then:

> ...be done on the basis of full consideration of the special characteristics of the industry in question — its technology and other conditions of supply, the nature of its market — and of the varying mix of public purposes, economic and other, that regulation is supposed to serve.[1]

Economic Objectives

The resources which determine our society's capacity to produce goods and services are scarce in relation to the depth and multiplicity of our needs and wants which can be satisfied by the goods and services we produce. Thus, the problem is to choose how to allocate our fixed bundle of resources so they will yield the most satisfaction to society. Efficient resource use is the major objective that economics concerns itself with.

Resource efficiency not only includes the achievement of minimum costs with the given allocation of resources — at one point in time (technical efficiency) and over time (dynamic efficiency) — but also implies optimal product variety (qualitative efficiency), and in the broad sense includes optimal income distribution.

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[1] A.E. Kahn, The Economics of Regulation: Principles and Institutions, vol. 1: Economic Principles (New York: John Wiley & Sons, 1970), p. 13-14.

The discipline of economics studies the manner in which resource efficiency is brought about:

> It is concerned with the way in which...transacting units or groupings make their economic decisions, and the way in which their several activities are coordinated by economic institutions to make the basic choices dictated by the universal problem of scarcity — what to produce, how and by whom to produce it, and how the product is to be distributed. In Western economies, the coordination is effected through the market system. Therefore microeconomics is concerned with the operation of individual markets — how prices, outputs and distributive shares are determined — and their interrelationships. The criteria of effective performance consist in the desirability of the resulting allocation of resources, the physical efficiency (both statically and dynamically) with which scarce resources are used, and the acceptability of the resulting distribution of income.[2]

As it has developed, regulatory economics is concerned primarily with providing the possible means by which an industry can be led to the achievement of the greatest resource efficiency possible in a regulatory context, with the effects on income distribution usually being ignored. (Regulatory constraints placed on an industry will automatically affect income distribution in some way, but regulatory economics rarely attempts to make policy prescriptions that are directly designed to affect distributive equity. Justification for treating income distribution separately from resource efficiency rests on the assumption that any inequities in income distribution can be alleviated through the taxation system. Lump-sum transfer payments can be used to redistribute income with little or no distortion of resource efficiency.)

It should be kept in mind that the specific performance goals of regulation should be a function of the political process. What constitutes "good" performance from an economic viewpoint should be determined by political or ethical criteria, and economists cannot be expected to be any more qualified to make the choice of criteria than anyone else. Economic efficiency labelled as "good" performance implies an underlying value judgement that cannot be made solely on economic grounds.

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[2] Ibid., p. 16.

The role of the economist is to also clearly explain the possible economic costs and benefits, in terms of resource efficiency, of various alternative policies to the decision makers. Regulatory economics is concerned with providing guidance to the policy makers and administrators who develop and apply policies involved with the regulation of industry.

Economic Rationale for Regulation

In this section I will attempt to develop a framework which describes the set of conditions under which government regulation of an industry may be economically justified. The justification will be based on the ability of the regulatory process to improve efficiency in the industry: allocative, technical, qualitative, or dynamic efficiency.[3]

Functioning of the Market Mechanism

Regulation can be economically justified if the economic benefits of improved performance brought about by regulation exceed the costs of regulation.[4] Improved performance from an economic standpoint in the case of regulation refers to better efficiency: allocative, technical, qualitative, and dynamic efficiency. But the question has to be asked: under what conditions is intervention in a market necessary to bring about this improvement in efficiency?

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[3] Allocative efficiency implies (or includes) technical and qualitative efficiency. Allocative efficiency requires scarce resources to be used in such a manner that maximizes the consumer satisfaction gained from those resources — this precludes any waste of resources through inefficient production techniques (technical efficiency), and entails production decisions which are qualitatively responsive to consumer tastes (qualitative efficiency).

The partial answer to this question is that intervention may be necessary because market "imperfections" exist. Such an answer implies that the competitive market system with its set of prices perfectly responsive to the laws of supply and demand will result in the most efficient use and allocation of resources and thus maximization of welfare for the entire economy (Pareto efficient). Hence, intervention in a market can only result in improved efficiency if something is preventing the competitive market from functioning properly in the first place:

> ...belief in the invisible hand does not imply that the government has no part to play in the economic system. Quite the contrary. If it is in general true that men, following their own self-interest, act in a way that is of benefit to society, it is, to quote Edwin Cannan, 'because human institutions are arranged so as to compel self-interest to work in directions in which it will be beneficient.' Our task as economists is to help in the devising and improving of those institutions.[5]

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[4] In addition, because regulation uses scarce resources, an optimal amount of regulation exists depending on the conditions of supply and demand. In other words, regulation should be supplied up to the point where the marginal benefits from regulation equal the marginal costs (assuming that at some quantity the marginal benefits are greater than the marginal costs).

[5] Coase, R.H., "The Economics of Broadcasting and Government Policy" AER Papers and Proceedings, (May 1966), 444.

The competitive market model, while not wholly realistic, is a useful concept in analyzing and prescribing policies for some aspects of our economy:

> For all the great modifications to which market economies have been subjected in practice during the last century, and for all the qualifications that must be attached to the case for such an economy, the competitive market model is still an important measure...descriptive both or reality and of the community's conception of what an ideal economic system would look like.[6]

The economic justifications for regulation will largely be based in this thesis on the ability of regulation to induce an industry to behave in a manner that will more closely approximate competitive market performance.

In a competitive market system prices, costs, and profits reflect relative scarcities and surpluses, and induce the owners of factors of production to use resources that are in the greatest demand relative to supply (allocative efficiency). The prices of goods and services, and the incomes of the factors of production, are the mechanism through which the market system operates. Thus,the decisions as to where resources are allocated and what shall be produced are left to the voluntary decisions of purchasers, whose decisions are guided by product prices and their own wants and preferences.

When the prices of goods and services reflect their true opportunity costs buyers can accurately judge whether the satisfaction received as a result of purchasing any particular product is worth the opportunity cost or sacrifice of the other products forgone.[7]

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[6] Kahn, The Economics of Regulation, p. 1.

[7] Ibid., p. 66 - 67.

Thus, the greatest possible satisfaction gained from our scarce resources will accrue to consumers if the prices of all products accurately reflect their respective opportunity costs. If prices fulfill this function, consumers will, through their purchase decisions, guide our scarce resources into those lines of production that will yield more satisfaction than any alternative production mix, and thus total satisfaction will be maximized.

Since the true opportunity cost of producing any one product is its marginal social cost, having price equal to marginal cost for all products is needed to ensure the most efficient allocation of resources in the economy (Pareto efficient). If the price for a particular commodity exceeds marginal cost, some consumers who would normally buy the product will refrain from making those additional purchases because the price exaggerates the true opportunity cost or sacrifice if all other products are priced at their marginal cost.

In a perfectly competitive market, competition for customers will induce firms to drive prices down to a product's marginal cost, a necessary condition for the most efficient allocation of resources. (However, as will be discussed later under "second best" considerations, prices equal to marginal costs in any one industry is a necessary but not sufficient condition for an efficient allocation of resources.)

As far as technical (static) efficiency is concerned, in a competitive market firms which fail to operate at the lowest possible unit cost for their given output will incur losses and thus eventually be driven from the market. Competitive firms cannot afford any "X-inefficiencies" or economic waste. Competition for customers will weed out the inefficient firms.

In regards to the issues of qualitative and dynamic efficiency, however, the performance of a perfectly competitive market system is more ambiguous.

There exist some economic arguments against a purely competitive market, and these must be examined also. One argument is made on the grounds of achievement or lack of achievement of dynamic efficiency. Competitive firms may not be willing to bear the risks and costs of technological innovation because they are not protected from competitors who may copy their innovations, and thus they would not be able to benefit, in the long run, from their innovations. Also, competitive firms may not be able to generate enough funds to allocate to research and development. (And, in the end, the rate of technical progress is probably more important than resource allocation efficiency[8]).

On the other end of the scale, it is often argued that a monopolist will tend to be lethargic in its operations and thus also is not likely to become as dynamically efficient as possible. Because a monopolist faces little or no competition, its incentive to introduce technological innovations and increase productivity may be reduced. Competition may be needed to induce innovation designed to achieve better efficiency. Thus, the best solution to the problem of dynamic efficiency lies somewhere in between the two polar extremes of pure competition and pure monopoly.

A second economic argument against a perfectly competitive system is that optimal product variety (qualitative efficiency) may not be attained — competition may not result in the provision of the socially optimal degree of product differentiation. The effects of market structure on product variety is an important issue when considering regulation of the pay-TV industry because the value of pay-TV to society rests largely on its ability to provide a more socially optimal degree of product variety in television programming.

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[8] For an explanation see: F.M. Scherer, Industrial Market Structure and Economic Performance (Chicago: Rand McNally, 1970), p. 21.

The theory of product variety is traditionally associated with Chamberlin's theory of monopolistic competition, which predicts a trade-off between increased variety and allocative efficiency. This situation arises because a monopolistic competitor associated with a slightly differentiated product in a competitive industry will eventually produce an output for which average cost is not minimized and price exceeds marginal cost.[9]

Because of the downward sloping demand curve it faces, a monopolistically competitive market itself cannot be expected to provide optimal product variety. Using the concept of total surplus, M. Spence in a recent article has shown that under monopolistic competition (or monopoly) a firm's selection of product characteristics is likely to be biased away from the social optimum because of a divergence of social and private benefits resulting from possible differences in the marginal and average valuations of quality by consumers.[10]

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[9] Ibid., p. 13 - 15. Scherer provides an explanation of how this comes about.

[10] M. Spence, "Monopoly, Quality and Regulation," Bell Journal of Economics (Autumn 1975): 417 - 29.

The failure of the market arises from the inability of prices to convey information about the value attached to quality by inframarginal consumers; thus the benefits to a firm because of a change in quality may not be a measure of the true social benefits unless the marginal consumer is average or representative, and there is nothing intrinsic to the market that guarantees that the marginal purchaser is indeed representative.

However, much dissatisfaction exists among economists with regards to the way in which the theory of monopolistic competition deals with the problem of product variety. Kelvin Lancaster has developed an approach to consumer behavior that provides an alternative approach to the issue of the social optimality of different degrees of product differentiation. This intuitively appealing approach is different from the traditional treatment of consumer behavior in that it postulates that the utility which consumers attempt to maximize is derived from the properties or characteristics of goods rather than directly from the goods themselves. One of the assumptions used in this approach is that goods, in general, possess more than one characteristic, and many characteristics will be shared by more than one good. Since this approach conceptually views a good as having multiple characteristics, it is better suited to dealing with the problem of product differentiation.

This "characteristics" approach to consumer behavior was first introduced by Lancaster in its general form in 1966.[11] Nine years later Lancaster published another article in which he used this theory to examine the problem of optimal variety in a world in which every consumer knows exactly what he prefers and how to achieve personal optimality within his constraints.[12] One of the conclusions that emerged from his analysis is that there exists a socially optimal degree of product differentiation which would be achieved under perfect competition, but only if conditions of increasing returns to scale did not exist. (It is very intuitively understandable that conditions of increasing returns will restrict the number and variety of products that it is desirable to supply.)

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[11] K. Lancaster, "A New Approach to Consumer Theory", Journal of Political Economy (April 1966): 132 - 57.

Thus, on a theoretical level, the effect of market structure on optimal product variety is somewhat inconclusive if not confusing at this point in time. While the competitive model is useful in analyzing the functioning of some aspects of our economy (such as resource allocation), it simply cannot be used in analyzing and evaluating other aspects of the economy (such as qualitative or dynamic efficiency).

Another fault of the purely competitive system from a political and economic viewpoint is its potentially unstable effect on employment:

> It is conceivable that the hair-trigger price adjustments of purely and perfectly competitive markets could intensify tendencies toward instability, making it more difficult to combat the waste and human misery of cyclical unemployment through fiscal and monetary policy measures.[13]

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[12] K. Lancaster, "Socially Optimal Product Differentiation," American Economic Reivew (September 1975): 567 - 85.

[13] F.M. Scherer, Industrial Market Structure and Economic Performance, p. 21.

Presumably workers prefer stability in employment opportunities to unstability (all other things remaining constant).[14]

As far as this performance goal is concerned, the monopolistic industry organization may be the ideal form of organization since it is more conducive to stability. However, this issue is far from being resolved, and there is some evidence to the contrary. Roger Sherman has surveyed four major empirical studies which explore this issue and he tentatively concludes that concentration is associated with greater fluctuations in total working hours.[15] However, any attempt to explain the relation between employment risk and monopoly power is very difficult because firms will generally make a greater effort to keep more skilled workers in periods of demand instability (usually because such workers possess more of the firm's investment in training), and it happens that firms in more concentrated industries tend to employ more highly skilled workers.[16] Thus, the success of attempts to correlate concentration and employment instability will depend on how well they deal with the problem of systematic differences in worker skills.

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[14] D.S. Smith has produced some empirical support for the fact that workers must be compensated for employment instability (employment risk) in the form of higher wage rates (see D.S. Smith, "Concentration and Employment Fluctuations," Western Economic Journal, September 1971: 267-77). Smith used the standard deviation in the ratio of weekly production hours to the average weekly production hours in 73 industries to represent employment risk, and found that workers who bear more employment risk apparently insist on a higher average wage rate.

[15] R. Sherman, The Economics of Industry, (Boston: Little, Brown and Company, 1974), pp. 205 - 07.

[16] see L.W. Weiss, "Concentration and Labor Earnings," American Economic Review (March 1966): 96 - 117.

Because the market system does have these potential faults of instability, sub-optimal product differentiation and dynamic efficiency, regulation aimed at removing these faults may be justified even if no static "imperfections" in the market exist. Thus, regulation designed to bring about increased dynamic efficiency or stability, or a more optimal degree of product variety, may be economically justified.

From a social viewpoint, the competitive market system also has its faults. Perhaps the most important criticism arises from the fact that votes in a market system as to where resources are allocated are based on dollars, and thus, because individuals are not equally wealthy to begin with, some individuals will have more influence in the market than others. A competitive economy maximizes the benefits gained from our scarce resources, but these benefits are the benefits which accrue to the individuals with money.

The actual mix of goods and services produced in our economy, given the state of technology and a fixed supply of resources, is dependent on consumer tastes and the distribution of income. Those individuals with relatively high income have a greater influence than low income individuals on output and the employment of resources because they have more "dollars" (representing property rights to the use of scarce resources) to bid for the output of the economy. On the other hand, at least on a theoretical basis, decisions in the public sector are made through the political process where each individual has the same influence through his political vote, and thus government participation in an economy might be justified on the grounds of equity.

Competitive allocations may also involve considerable inequalities in income distribution, and thus while the competitive market may achieve Pareto efficiency, this may not be a socially optimum result. The pattern of resource ownership in the economy may be such that the resulting Pareto efficient pattern of production and its pattern of income distribution is less acceptable to society than a Pareto inefficient composition of output which results in a different pattern of real income distribution.[17]

Second Best Considerations

Pareto provided conditions necessary for society to reach a position of optimum welfare through resource allocation — conditions which are met in a perfectly competitive economy. However, the marginal conditions necessary for maximum welfare are global conditions which have to be satisfied throughout the entire economic system. There must be conditions of perfect competition in all markets in the economy if a Pareto efficient allocation of resources is to result.

However, in reality all of the marginal conditions cannot possibly be met. Because of the pervasive market "imperfections" in the real world,[18] a Pareto optimum is unattainable. We are thus faced with a suboptimal position about which Paretian conditions give no guidance.

The important policy question then becomes whether the "second best" position calls for a policy aimed at fulfilling as many of the Paretian conditions as possible in order to get nearly to a Pareto optimum.

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[17] However, this problem can be solved through means other than manipulating the type of market system in operation. The market system can be left to operate and attempts to improve the unequal distribution of wealth can come about through such measures as transfer payments amongst individuals.

[18] Not only are market imperfections prevalent in all markets, but there are large segments of the economy to which the competitive model is not wholly applicable: public utilities, government sectors, households, non-profit sectors.

Are movements toward the competitive norm desirable in terms of resource allocation efficiency? Even if we can never achieve pure and perfect competition in all industries, do we gain by moving towards this ideal and regulating so as to alleviate market imperfections?

In a formal theoretical proof, Lipsey and Lancaster (1956) have demonstrated that if deviations from marginal cost pricing exist anywhere else in the economy, we cannot make the general proposition that rules designed to improve the "competitiveness" of any single sector will be desirable from a resource allocation standpoint.[19] While this approach, and others like it, are negative in nature, attempts to establish more positive general second-best conditions have met with little success.

However, even though it appears that we can make no general predictions of the effect on allocative efficiency of a movement towards marginal cost pricing in any one sector of the economy, this does not necessarily rule out logical solutions to the pricing problem in specific situations. In the words of A. Kahn:

> The existence of pervasive imperfections in the economy greatly complicates the problem of efficient pricing. In the author's view in principle it does not make solution impossible in specific situations, nor does it make it practically impossible in such instances to make the type of informed piecemeal decisions policy makers must inevitably make about how far and in what directions to qualify the basic rule of marginal-cost pricing.[20]

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[19] But, there is little doubt that in most circumstances markets, even if highly imperfect, allocate resources more efficiently than their feasible alternatives, such as direct administrative controls. The decisions in a market economy are made by the individual buyers and sellers in the market, and the market permits a very sensitive expression of individual preferences.

[20] A. Kahn, The Economics of Regulation, p. 70.

This position taken by Kahn, however, may arise from a defensive attitude resulting from the fact that much of the economic analysis in his book would have little relevancy if in specific situations it would not be possible to prescribe economically optimal pricing principles or policies. W. Baumol shares an opinion similar to Kahn:

> ...there looms most menacingly the injunction of the theorem of the second best: Thou shalt not optimize piecemeal. But I would argue that in practice this admonition must be softened less otherwise all effective policy be stultified. I would propose, instead, that one should shun piecemeal ameliorative measures that have not been sanctioned by careful analysis and the liberal use of common sense. Many policies may plausibly be expected to yield improvements even though things elsewhere are not organized optimally.[21]

The technological and institutional characteristics of the pay-TV industry are such that it might provide one of those specific situations in which pricing policies can be designed to result in a more efficient allocation of resources. Pricing and efficiency in the pay-TV industry will be discussed in the next chapter.

While the effects on resource allocation are uncertain, other benefits accrue by moving towards the competitive norm — and it appears the government believes these benefits to outweigh the costs. Government regulation in our economy influences the functioning of most private sectors through a variety of means (such as the prohibiting of unfair competition, the providing of market information, the enforcement of contracts, providing tariff protection, subsidies, grants, industrial legislation, and so on). The majority of these influences are designed primarily to operate at the periphory of the market, maintaining the institutions within whose framework the free market can continue to function. Their role is to remove the imperfections of competition, not to supplant it.[22] Thus, an inherent belief in the desirability of the competitive market system is expressed.

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[21] W.J. Baumol, Welfare Economics and the Theory of the State (Cambridge: Harvard University Press, 1965), p. 30.

While the government has taken upon itself the role of actually directing and managing the operations in a few industries, the major emphasis of regulation in our economy is felt in attempt to adjust certain parameters of markets to produce desired behavior, while leaving the basic decisions of the market to the private components who make up the industry. In those cases where the government has replaced the market mechanism as the determinant of industrial output, regulation is by and large designed to achieve the same results as would be produced through effective competition.

The history of the North American continent is evidence of the fact that our society as a whole considers the competitive market economy as the ideal economic system ("ideal" at least in some respects), for social as well as economic reasons.[23] Our society profoundly values the institution of private property and the private initiative and control of economic activities.

As we move to a more competitive situation, technical or productive efficiency almost certainly does improve in general. Without competitive pressures X-inefficiencies often arise. Almost any businessman will tell you that competitive pressures are very successful in motivating firms to produce a better product and at lower costs:

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[22] Kahn, The Economics of Regulation, p. 2.

[23] The competitive system is socially desirable in the sense that it allows for the dispersion of power, a desirable result to many.

> Competition will weed out the inefficient and concentrate production in the efficient; it will determine, by the objective test of market survival, who should be permitted to produce; it will force producers to be progressive and to offer customers the services they want and for which they are willing to pay; it will assure the allocation of labor and other inputs into the lines of production in which they will make the maximum contribution to total output.[24]

A move to a more competitive industrial scene will also help replenish some of the motivation that is being lost by businessmen as a result of the increasing government intervention in today's society allows for less individual initiative upon which our economy is very dependent.

Also, the movement towards a more competitive market system does not necessarily have to mean a sacrifice in technological innovation as discussed previously. If it is true that the degree of technological innovation decreases as the degree of competition increases, other means can be used to achieve dynamic efficiency, such as the use of patents and tax incentives that encourage research and development.

Actually, the move to a more competitive market system can be expected to increase the rate of technological innovation in certain cases where an industry is characterized by a high degree of monopoly power. F.M. Scherer, in a review of the empirical evidence on technological innovation, concluded that:

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[24] Ibid., p. 28.

> A little bit of monopoly power, in the form of structural concentration, is conducive to invention and innovation, particularly when advances in the relevant knowledge base occur slowly. But very high concentration has a favorable effect only in rare cases, and more often it is apt to retard progress by restricting the number of independent sources of initiative and by dampening firms' incentive to gain market position through accelerated research and development.[25]

In a survey of the literature on market structure and innovation, Kamien and Schwartz came to a similar conclusion:

> Little support has been found for the standard hypothesis that R & D activity increases with monopoly power ...A new empirically inspired hypothesis has emerged to the effect that a market structure intermediate between monopoly and perfect competition would promote the highest rate of inventive activity.[26]

Market "Imperfections"

As already discussed, government intervention in a market usually can only result in improved efficiency if something is preventing the competitive market from functioning properly in the first place. These market "imperfections", or situations which may justify regulation, can be conveniently grouped into seven categories:

1) decreasing costs
2) indivisibilities
3) externalities
4) public goods
5) ill-defined property rights
6) equilibrium
7) monopolizing elements

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[25] Scherer, Industrial Market Structure and Economic Performance, p.377.

[26] M. Kamien and N. Schwartz, "Market Structure and Innovation," Journal of Economic Literature 13 (1975): 32.

It should be kept in mind that not all market imperfections may justify intervention in the market by government. For some imperfections there is no reason why the government or some external agent would be able to alleviate the problem any better than the market itself. For example, factor immobility is certainly a market imperfection, but the cost of making these factors of production "mobile" should be considered as part of the total cost of these factors of production, and thus is internalized into the decisions of the market participants. Factor immobility alone cannot justify government intervention.

Likewise, another market imperfection that is often believed to be a justification for government intervention, but is not really a justification, is imperfect information. The perfectly competitive model unrealistically assumes that perfect or complete information is available to all participants in the economy. However, although information is generally not perfect in the real world, again the cost of obtaining better information is internalized by the market as the benefits from better information accrue to the decision-making units. (Acutually, information should be considered as a market in itself — a demand and supply exists for information. The government would only be justified in entering the information market if conditions such as externalities or indivisibilities existed; the lack of information to market participants in itself does not justify government regulation in an economy, but imperfections in the information market may.)

Decreasing costs

The first of these market "imperfections" refers to the existence of economies of scale which signify that the technology of an industry is such that unit costs for a firm fall as output is increased up to a certain point. These economies can arise from a variety of sources, such as the increased specialization of labor that is possible with greater output.

If scale economies are significant in that costs decrease quickly as output is increased over the relevant range of industry output, the emergence of one or only a few firms in the market is likely, as one or only a few firms the size of the market can produce most efficiently and thus underprice and drive out any competition. And in an industry in which economies of size are significant, large firms are desirable in the sense that activities in the industry can be most efficiently conducted by large firms — a firm which produces all or most of the industry's output is necessary to achieve the lowest costs per unit of output possible with the given demand.

The problem of "natural monopoly" or "natural oligopoly" is more prominent in Canada than in the U.S. because of the smaller market size in most Canadian industries. In many industries the minimum optimal scale of production allows for only a few firms which are large enough to take advantage of all relevant production and distribution economies of size. In other words, the market is so small that a few firms of optimal scale will in many cases comprise most or all of the market.

While one or only a few firms may result in the lowest possible average unit costs, such a structure also implies monopoly power, and thus the industry can no more be expected to function as a competitive industry would. The market can no longer be relied upon to achieve the desirable performance goals described earlier, and government regulation may be needed to ensure that these goals are attained.

However, while decreasing costs may provide justification for government intervention, it is not an entirely sufficient condition in itself for regulation. Each industry that is characterized by decreasing costs has to be individually assessed in determining whether it will perform in a relatively satisfactory manner if left to itself, and there are many factors which have to be taken into consideration before a decision can be made as to whether regulation is economically justified:

> ...the analysis of what is at best a most intricate and intractable problem, (is) that of identifying positions of high levels of market power, assessing their significance in an interdependent market economy and attempting to devise remedies.[27]

From an economic viewpoint, while high concentration levels will be necessary to achieve minimum average costs, high concentration may also lead to X-inefficiencies associated with the lack of competition. Monopoly power in any one industry may also induce non-competitive behavior in those markets which are input suppliers or output buyers to the industry.

From a political viewpoint, industries characterized by decreasing costs are regulated so as to take advantage of any relevant scale economies while avoiding the exploitation of consumers and other industries which interact with the industry. Exploitation is a major concern, especially for industries which provide essential goods and services which have a low price elasticity (electric utilities, telephones, etc.). The potential for the misuse of the monopoly power does exist, and firms may, if unregulated, charge excessive prices, restrict output, or discriminate among buyers — behavior that does not result from a competitive situation.

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[27] Canada, Dept. of Consumer and Corporate Affairs, Dynamic Change and Accountability in a Canadian Market Economy (Ottawa: 1976), p. 127.

However, the fact that an industry is heavily concentrated does not imply that firms will automatically restrict output and charge excessive prices.[28] The degree to which a firm with monopoly power, in an attempt to maximize profits, will restrict output to a level below what the output would be in a competitive industry and correspondingly raise prices, depends on numerous factors. The degree to which higher prices will attract other firms into the industry, technological constraints on output expansion, the product's price elasticity, the cross-elasticities of demand for substitute products, and the degree of cooperation between the firms in the industry, are all factors which will influence pricing behavior. Also, prices may be intentionally kept down to the degree a firm adopts a sales or "market share" maximization objective function as opposed to a profit maximization objective.

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[28] In one interesting empirical study of the relationship between industrial concentration and allocative efficiency by G. Krouse, the regression results from a sample of 115 firms did not confirm the hypothesis that firms in concentrated industries restrict their output and correspondingly raise prices relative to firms in unconcentrated industries. There were no systematic differences between concentrated and relatively unconcentrated firms in output behavior, according to his empirical model; see G. Krouse, "Measuring Allocative Efficiency With Technological Uncertainty," Journal of Finance 31 (May 1975): 685 - 700.

The importance of the product or service and the resulting degree of demand elasticity is a very important factor to be taken into consideration. If the product is deemed a necessity (such as electricity), the resulting inelasticity of demand is more likely to require government regulation to prevent exploitation of consumers than for a luxury good or product with a relatively high demand elasticity. Also, whether the fixed costs of the "natural monopolist" are common or joint in nature further complicates the problem.

It should be kept in mind that the supernormal profit earned from "excessive" prices may or may not be more economically desirable than lower consumer prices. These profits may lead to benefits such as research and development, investment, or larger dividends to shareholders. The advantages resulting from these excess profits have to be weighed against the disadvantages. If a firm can use excess profits in a way that increases welfare more than the increase in welfare to consumers which results from lower prices, society may consider some excess profits to be desirable. In short, a complicated problem exists.

Summing up, if an industry characterized by decreasing costs is to take advantage of the scale economies and operate more efficiently (from a cost standpoint), it should be regulated so as to avoid the inefficiencies associated with monopolist activities and to assure that firm size is the optimum in terms of technical efficiency. To ensure optimal firm size, government franchises or licenses can be used to limit entry into the industry. The pricing problem is a more complicated issue, and is traditionally handled by regulating prices so they cannot exceed cost (including a "fair" return).

Indivisibilities

Somewhat related to the argument of decreasing costs as a rationale for regulation is the presence of indivisibilities in a market. Indivisibilities arise when the individual consumption units of a commodity are smaller than the units of production. The total product cannot be provided by producing smaller products to be sold individually to consumers. Production is "indivisible".

A highway is an example of a product characterized by indivisibilities. The construction of a highway is an all-or-nothing proposition, but the units of consumption are individual crossings along the highway by the individual vehicles who use it.

Production indivisibilities may warrant government regulation if the production size is large relative to the market. Using our example, only one highway is needed between two cities. The construction of a second highway, even if profitable in terms of direct costs and benefits, would use up resources unnecessarily. Thus, as in the case of decreasing costs, regulation may be needed to ensure the optimum quantity of production while ensuring that any resulting monopoly power is not misused.

Also, production indivisibilities give rise to pricing and resource allocation problems. Any positive price charged for a product whose individual consumption units are smaller than the units of production will result in the exclusion of some potential consumers even though there may be no corresponding reduction in resources. In such a case, external intervention may be necessary to ensure proper price performance.

Externalities

An important market imperfection which may warrant regulation of an industry is the existence of externalities. Externalities or "third-party effects", as the term implies, occur when an outcome of an activity carried on by one decision maker affects an external party to the initial activity. For example, night flights by jumbo jets produce the unintended externality of causing residents near airports to lose sleep. However, in deciding how many jumbo jets to allow the use of an airport, the costs of lost sleep and annoyance may not be taken into consideration because the residents near airports are external to the decision-making activity. This is an example of external costs or diseconomies, but externalities can also involve benefits or external economies.

In the ultimate sense, as pointed out by James Quirk, externalities arise from the fact that the world we live in is limited in size and natural resources, and thus any activities tend to "crowd in" on the range of activities available to others, whether intended or not.[29] We all live in the same world with a high degree of interaction, and the importance of externalities grows as our population increases and as we crowd ourselves into urban centers.

The essence of externalities is that their costs or benefits are not reflected in market prices, and thus the decision of the unit creating externalities does not take their effect into account. In the case of negative externalities, the decision-making unit will choose an output that is above the economically optimal output becuase the marginal benefit received by the decision-making unit from an economic activity is dependent on a price which does not reflect the full costs of the economic activity. In other words, the true cost of resources allocated to that particular activity is understated, and as a consequence too many resources are allocated.

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[29] J.P. Quirk, Intermediate Microeconomics (Chicago: SRA, 1976), p. 318.

Likewise, in the case of positive externalities an output will be chosen that is below the economically optimal output level. (In fact, an industry may not even exist even though it would if the positive externalities it created were somehow internalized.)

It can be argued that social welfare would be increased if decisions are modified to take into account their external effects, and this is why an external agent such as the government can be justified in intervening in a market. The ideal competitive system described earlier rests on the assumption of the absence of any external costs and benefits.

Thus, government regulation of a market may be justified if it can manipulate the parameters of the market so that any externalities are internalized. In other words, regulation should be designed to impose social regulations on an industry or to subsidize or tax an industry so as to bring the full "external" effects into the decision-making process of the responsible parties.[30]

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[30] The argument is sometimes raised that because it is almost impossible to determine and evaluate all of the externalities attendant to an economic activity, the internalization of any one externality by government intervention cannot be justified. For example, our society and economy is so complex that there are numerous externalities created by a pay-TV industry, and it would be impossible to evaluate and weigh all of these externalities in determining the degree to which the pay-TV industry should be taxed or subsidized to internalize these effects. The proponents of this argument claim that you cannot justify the internalization of, for example, the negative externality of adverse effects on our culture by pay-TV because the value of all externalities taken together may be positive.

However, while in principle this is an economic justification for regulation, the actual assignment of values to external benefits and costs in any particular case is a normative procedure, and thus the political process may also enter in.

Public goods

A pure public good is characterized by the fact that its benefits are available to everyone; no one can be excluded from the benefits of a public good and its consumption by any individual does not reduce the available amount for others. It is thus a special type of consumption indivisibility. The classic example of a public good is national defense. If defense is provided for a country, everyone automatically benefits. Individuals cannot be excluded from its benefits whether they pay for it or not,[31] and consumption by any one individual does not affect the consumption of others.

Because of these characteristics a public good is "unmarketable" even though a significant demand may exist for the good. A private firm would not supply a public good because individuals would not be willing to pay the firm a positive price because they would be able to consume the good at a zero price once it is produced at someone else's expense. Thus, because individuals would not be willing to pay for the good what it is worth to them, it would not be provided unless collective action is taken. Government intervention may therefore be justified if the market fails to supply the good when a sufficient demand exists. Regulation may take the form of general compulsory tax revenues paid to the producers of the public good.

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[31] This is not exactly true as, depending on where military operations are centered, some parts of a country will benefit more than other parts.

Ill-defined property rights

Government intervention in the economy may also be justified if ill-defined property rights exist. In such a case, overuse of scarce resources may be prevented if they are made "public" and allocated by the government. Examples of ill-defined property rights are ownership of the airwaves, or the water in a river, or the air which surrounds a city.

Fluctuating equilibrium

If competition in a market is possible, but conditions are such that market equilibrium is constantly changing because of highly variable demand or supply, regulation may be warranted if the swings in output and prices are too costly to consumers and producers. Government intervention aimed at stabilizing output and prices, and protecting the equity of firms in the industry, may provide economic benefits which exceed the costs of regulation.

While fluctuating equilibrium is not really a market "imperfection" in a static sense, it certainly can be considered as so in a dynamic sense. The greatest difficulty in evaluating this market imperfection as a justification for government regulation lies in the complicated nature of the problem — there are numerous factors to be evaluated.

A significantly variable equilibrium is most likely to occur in industries characterized by cyclical or random fluctuations in demand. In this case, excess capacity will exist in periods of low demand, and the result may be bitter competition amongst the firms in the industry for the remaining customers. Severe price competition is likely (the degree to which depends on the ratio of fixed to total costs) as firms will seek a larger customer base over which to spread overhead costs. Firms will only be willing to leave the industry when literally on the brink of collapse, as increases in demand can be foreseen when the cycle swings to a more favorable period.

Destructive competition of this sort may have several potentially undesirable results. One of these undesirable results involves the loss or deterioration of capacity needed when demand recovers. Although this might be desirable if the most inefficient firms are the ones forced to leave an industry in a prolonged slump, in actuality the firms forced to leave will be those which are weakest financially — and those weakest financially will not necessarily be the least efficient producers (although some type of relationship probably exists between the two). For example, a firm may have a greater ability to borrow because it is a branch plant of a large foreign corporation, and thus it may be in a better position to survive a prolonged slump than a newer local firm which may even be more efficient from a technical viewpoint. (However, as F.M. Scherer points out, the loss of capacity because of a slump in business conditions may not be as serious a problem as it appears at first.[32] Scherer explains that seldom does an outright dismantling of production facilities occur after a bankruptcy. Rather, plants are normally purchased by another solvent firm at bargain prices, and that firm is eventually able to restore the plant to operation.)

Another undesirable outcome of fluctuations in demand and their resulting adjustments in firm numbers and size, is the numerous inefficiencies associated with these adjustments. Resources are used in laying off workers and then rehiring them, in the storage of equipment, the loss in organizational continuity, and so on.

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[32] Scherer, Industrial Market Structure and Economic Performance, p. 200.

A variable equilibrium is also likely to result in more concentration in an industry. Cut throat competition during a slump may induce smaller or weaker firms to merge with stronger firms, something they would not normally do under more favorable conditions.

Government regulation in the form of some sort of price stabilization program may help remove some of the undesirable results of a fluctuating equilibrium, but such an action has several costs associated with it which must also be evaluated. For example, any tampering with the price mechanism may reduce resource and technical efficiency in the long run. Thus, while the potential certainly exists for the benefits of government regulation to exceed its costs, many factors have to be evaluated in determining whether government intervention is justified in any particular case.

Monopolizing elements

It is in the best interests of the firms in any industry to coordinate their actions rather than to independently compete against each other. Higher profits can be earned if cooperative policies are pursued or if concentration is increased through such means as merger. Therefore, even though coordination is difficult (especially as the number of firms in an industry increases), there will always be an intrinsic tendency in an industry to achieve a greater degree of coordination or monopoly power.

This monopolizing element will exist in all industries, although, because of the many problems faced in coordination, it is likely to be threatening only in the more concentrated industries. Government intervention may therefore be justified as a preventive measure against this potential usurper of the competitive system.

However, the best solution to this problem lies in the universal application of competition policy to the whole economy, and not through individual regulation of each industry.(Selective regulation would amount to detailed central direction by the government; general policies would leave the essential functions of the economy to the individual private market components.)

Efficiency of the Regulatory Process

The efficiency of the regulatory process must be assessed as part of the procedure in determining whether the government is justified in intervening in markets. Even if the necessary conditions exist, such as significant scale economies or externalities, which would warrant some kind of external intervention in the market, the inability of the regulatory process to efficiently deal with these problems may give rise to the fact that society is better off if the government doesn't intervene in the first place. Because the regulatory process cannot always achieve the ideal theoretical solution, it is possible that regulation may not be justified in situations which may theoretically warrant regulation.

Therefore, what has to be assessed is the efficiency of the regulatory process, and there is considerable evidence which points to the fact that a large part of government regulation is suprisingly ineffectual. The regulatory literature is full of biting criticisms of the regulatory process:

> The revival of serious discontent and of research on public regulation in the 1960's has now bred several specialties...The new thought and research already amounts to a devastating indictment of regulation as possibly an intractable vehicle of waste and deception.[33]

It is the opinion of many that, in general, instead of encouraging competitive behavior regulation has often allowed and perpetuated inefficiencies.

One of the reasons for this general inefficiency of the regulatory process is that regulation theory and its policy prescriptions must almost always be tempered with practicality, as economically ideal principles fall short of providing workable rules for regulators. As a result:

> ...even the most sophisticated and conscientious effort to apply these principles inevitably involves large doses of subjective judgement and, at the very best, can achieve only the roughest possible approximation of the desired results.[34]

Thus, while the concept of regulation is valid, the means of regulation policy need improvement. A.H. Ende, a regulator with the FCC over twenty-five years has this to say:

> As a former regulator, whose horns may yet be visible, I must confess that I have a strong, adverse visceral reaction whenever I encounter dogmatic attacks upon or denigration of the regulatory processes...I believe that the concept of regulation is as sound today as it ever was and probably much more important in our highly mechanized and integrated society than ever before. What must be changed, and changed promptly and decisively, is the method by which we regulate and the perspectives we use in carrying out the regulation.[35]

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[33] W.G. Shepherd and T.B. Gies, eds., Regulation in Further Perspective, p. 1.

[34] Kahn, The Economics of Regulation, p. 182.

[35] A.H. Ende, "Administrative Reform and the Regulatory Processes," in Public Utility Regulation, eds., W. Sichel and T. Gies (Lexington, Mass.: Lexington, 1975), p. 77.

The bureaucractic red tape involved with developing and implementing regulation policies also considerably reduces the efficiency of the regulatory approach:

> ...it...is indirect and time-consuming — hearings and rulemaking procedures can and do take years to conclude and may be appealed to the courts, causing further delays. The delays inherent in regulatory procedures are compounded by budgetary and staffing limitations. Thus, regulatory agencies are scarcely in a position to be fully effective in their dealings with all the entities subject to their jurisdiction.[36]

Another recurring criticism of regulation involves the inability of the regulatory process to adjust and evolve along with changes in the industry:

> However fluid an organization may be in its beginning, it must inevitably adopt certain policies and organizational forms which condition its thinking and limit the range of its policies. Within limits, the regulatory commission may search for what is in the public interest, but it is not likely to find acceptable any solutions which imply fundamental changes in its settled policies.[37]

As an industry changes and evolves the optimal regulatory policy will also change; but the political and regulatory process is structured in such a manner that change is not readily or easily brought about.

R. H. Coase goes on to say that, in addition to this lack of adaptability, the regulatory process often becomes a perpetuator of industry motives rather than a champion of the public interest. (Such behavior is the major postulate of the capture theory of regulation which states that regulatory agencies tend to be "captured" by the industry they regulate.) Economic decision-making units are assumed to act in a manner which is consistent with their own self interest. If this is true, then they will allocate resources towards changing, for their own benefit, the institutional rules which govern them. Thus, firms in an industry can be expected to allocate resources towards securing control of governmental machinery to improve their own position, an action which may be contrary to the interest of the rest of society.

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[36] Ibid., p. 72.

[37] R.H. Coase, "The Economics of Broadcasting and Government Policy," AER Papers and Proceedings 56 (May 1966): 442.

An evaluation of the efficiency of the regulatory process is basically an empirical matter, and an overall assessment will not be made here. However, there is sufficient evidence to suggest that the ability of the regulatory agency to regulate in an effectual way may be an important factor for evaluation in determining whether an industry should be subject to regulation in any particular case.

Summary

Table 4 briefly summarizes the cases for government regulation of an industry.

TABLE 4

REGULATION DESIGNED TO IMPROVE ECONOMIC EFFICIENCY

Market Imperfections	Type of Regulation	Benefits of Regulation	Cost of Regulation	Factors to be Evaluated
(i) decreasing costs	entry regulation designed to achieve optimum firm size (-licensing) (-public ownership)	greater technical efficiency	X-inefficiency Costs of legislation and administrative body	-industry concentration -shape and extent of scale economies
	price regulation (price ceiling)	lower consumer prices	-costs of legislation and administrative body -loss of profits -reduction in resource efficiency	-price elasticity -entry barriers -cross-elasticities of demand for substitute products -technological constraints on production -degree & type of cooperation or competition amongst the firms in the industry
(ii) indivisibilities	entry and price regulation	increased resource efficiency	costs of legislation and administrative body	
(iii) externalities	subsidisation or taxation, or social regulations	increased resource efficiency	costs of legislation and administrative body	
(iv) public goods	subsidisation or government provision of goods	provision of good or service	costs of legislation and administrative body	
(v) ill-defined property rights	government allocation of resources	more efficient use of resources	costs of legislation and administrative body	
(vi) unstable equilibrium	price stabilisation	-preservation of capacity	costs of legislation and administrative body sacrifice in longrun efficiency	-ratio of fixed to total costs -industry concentration -degree of variability in cyclical conditions
(vii) monopolizing elements	(best solution to the problem lies in universal application of competition policy)			

* Regulation designed to improve: dynamic efficiency, stability, qualitative efficiency

CHAPTER III

WHY REGULATE THE PAY-TV INDUSTRY?

The purpose of this chapter is to examine the economics of the various arguments as to why or why not the pay-TV industry should be regulated in light of the analysis for justification of government regulation presented in the previous chapter. The first question which should be asked in developing a regulatory policy is: Should the industry be regulated in the first place? The justifications for regulation, if any, will then determine the form which regulation should take.

Economic Arguments for Regulation

Natural Monopoly Argument

The problem of decreasing costs is applicable in some degree to both components of the pay-TV industry—the network entity and the exhibitors (those responsible for delivering pay-TV program packages).

As far as delivery is concerned, pay television is very likely to be offered through existing cable facilities.[1] The cable television industry itself is very capital intensive, resulting in relatively significant decreasing costs up to some point. However, pay-TV will be delivered over existing cable facilities, and thus the true economic costs of a pay-TV system will not include the large capital costs of cable equipment. (Although in reality pay-TV is likely to be assigned its share of the joint costs involved.)

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[1] See pp. 6 - 8.

Table 5, provided to the CRTC by the Pay Television Network (PTN), summarizes the exhibiting costs for various sizes of cable systems (these costs allow 5-year amortization and 15% interest charges, and are based on an intial penetration level of 20%).

TABLE 5

TOTAL COSTS / PAY TELEVISION SUBSCRIBER ($)

Size of Cable System	Annualized Capital Costs			Operating Costs	Total Annual Cost	Capital Cost / Total Annual Cost
	Headend VTRs and Scramblers	Security Devices	(Total)			
1,000	31.58	5.70	37.28	18.76	56.04	.665
3,000	18.53	5.70	24.23	18.76	42.99	.564
5,000	11.12	5.70	16.82	18.76	35.58	.473
8,000	18.19	16.50	34.69	23.36	58.05	.598
15,000	9.70	16.50	26.20	23.36	49.56	.529
25,000	5.82	19.50	25.32	26.01	51.33	.493
50,000	2.91	19.50	22.41	26.01	48.42	.463

Source: CRTC COMMENTS: Pay Television (ottawa, 1976), vol. 1, Comment #28: "Structuring the Introduction and Development of Pay Television in Canada" by (PTN) Pay Television Network, p. F-14.

If the increase in the size of cable system in terms of number of subscribers refers solely to an expansion of the area served by cable (ie. the penetration rate remains constant), then the change in costs represents a movement along the cost curve and thus indicates the extent of increasing or decreasing costs.

If this is the case, it can be seen from this set of data that the lowest per-subscriber costs occur for a cable system which reaches 5,000 outlets. Costs decrease up to this point, but rise as the size of the cable system increases to 8,000 subscribers. The headend (where programs are originated) equipment costs, which are mostly fixed costs in nature, are primarily responsible for the decreasing costs associated with size, but operating costs and security devices provide substantially increasing per unit costs.[2]

If the increased size of cable system in the data provided by PTN refers to an increase in the penetration rate only (ie. the area served remains constant), then the change in cost may represent shifts in the cost curve and is not reflective of economies of scale in the true static sense. (However, the increase in operating cost with size suggests that these data represent the first case — an expansion of the area served by cable. Installation and servicing costs per subscriber are likely to rise as the size of area increases. If the second case were true — increased penetration rates with the area served remaining constant — it would be difficult to explain the increase in operating costs per subscriber. If anything, operating costs would be expected to fall. Of course, these data might refer to some combination of both cases — an increase in the area by cable as well as a change in penetration rates or density.)

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[2] According to PTN, the larger the operator, in terms of subscribers, the more stringent are the security requirements (see CRTC, COMMENTS: Pay Television, Comment #28 by PTN Pay Television Network, p. F-10). Thus, larger operators would be impelled to use more sophisticated and expensive security devices. A number of different security systems have been developed, ranging from the relatively inexpensive (low initial capital cost) positive trap device that removes a jamming signal accompanying the pay-TV signal to the relatively expensive but more effective descrambler. However, this source of significantly increasing costs is difficult to explain — there appears to be no reason why larger operators would require better security, and thus the validity of this data is questionable.

Before any final conclusion can be made concerning the extent of decreasing costs in the cable-delivery of pay-TV, more and better data is obviously needed. However, if we assume that security equipment provides a source of constant or only slightly increasing costs (a reasonable assumption), then the headend equipment costs would result in sufficiently decreasing costs with size. Thus, the natural monopoly argument would be applicable to the delivery of pay-TV in any one metropolitan area.

One of the regulatory options seriously being considered by the government is the establishment of a national pay-TV program distributor or network as either a public corporation or a private entity with extensive monopoly powers. Such a proposal may be justified on the basis of scale economies.

On a somewhat subjective basis there is good reason to suspect that the economies of scale of a network entity may be substantial. For example, there is likely to be quite significant economies of size associated with the centralization of the brokerage function for program purchases into one large entity.[3] The number of sales representatives approaching program producers could be reduced, thus requiring less resources. (Likewise, the establishment of one national network entity would avoid expensive duplication of administrative tasks and other network functions.)

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[3] Ross, Economic and Legal Foundations of Cable Television, pp. 38-45.

Moreover, a network entity would have more bargaining power because of its large size,[4] and a central program buyer is in a better position to enforce quality control for a program series which is bought on the basis of a few pilot shows. Economies of risk-bearing may also result with the pooling of the high degree of risk inherent in television broadcasting.

Further economies can be realized through national promotion, one of the functions of the network. Because of its nature, pay-TV requires substantial promotion on a regular basis. Experience has shown that, unlike conventional broadcasting which is viewed by consumers as a "free" service, pay-TV requires relatively frequent consumer purchase decisions,[5] and thus consumers must be continually sold on the benefits of pay-TV.

The sources of scale economies associated with advertising are numerous. They might include the fact that quantity discounts are provided by the advertising media for large amounts of advertising. Also, economies may arise because some of the effects of advertising are cumulative. (For example, if a firm has already achieved consumer recognition through advertising, that recognition may be maintained with a less amount of advertising intensity than needed to achieve original product recognition.)

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[4] This last scale economy is classified as a pecuniary as opposed to real economy of scale, and the desirability of pecuniary economies is doubtful. Whereas real economies are realized through a more efficient physical use of factor inputs and are thus unambiguously beneficial, pecuniary economies result when a firm can use its size to pay lower prices for inputs, and thus their primary effect is to redistribute income in the favour of large firms at the expense of input suppliers.

[5] CRTC, COMMENTS: Pay Television, Comment #28 by PTN Pay Television Network, p. II-12.

There are also economies associated with national distribution of programming. Because program production costs are high and represent a fixed cost, the larger the audience the lower the per unit costs. One estimate of operating costs by A.D. Little, Inc. of a typical pay-cable operation (including both network and delivery functions) with 10,000 cable subscribers reveals that programming costs account for half of the total operating costs (see Table 6).

TABLE 6

PAY-CABLE OPERATING COSTS

Source of Costs	Percentage of Total Costs
Programming (includes distributor fee commission).......	50%
Earthstation (videocassettes)..........	6
Subscriber interface device............	7
Administration, billing, etc...........	6
Marketing and promotion	4
Installation of subscriber interface....	4
Pre-tax earnings.......................	23
Total	100%

Source: CRTC submissions, Comment #76, "A Report On Pay Television In The U.S.A." by Mediaspec Incorporated (Toronto, 1976), p. 39.

While it appears that the economies of scale associated with a national network may be quite significant, proper cost data are needed to determine their magnitude and effect on average costs.

One way of crudely assessing the importance of decreasing costs in an industry without the necessary empirical cost data is to observe the range of firm sizes in actual existence in the industry. The multi-firm behavior in some of the U.S. cities which operate pay-TV systems would seem to suggest that the extent of the scale economies is not enough to characterize the industry as a "natural monopoly". (However, the pay-TV industry is relatively new, and observations of trends in firm size over time will provide a clearer picture of the true situation.)

In conclusion, a pay-TV system (including both the exhibitors and the networks) is almost certainly characterized by decreasing costs of some magnitude. As far as the exhibitors are concerned, it can be seen from the data in Table 5 that the capital costs account for 66.5% to 46.3% of the total costs ranging from the smallest to the largest cable system, thus providing an important source of declining average costs over a large range. The network entity also has access to several potentially important economies of scale. Entry and firm size regulation in both parts of the industry might therefore be justified.

However, before we can conclusively state whether the rate and extent of the decrease in costs is significant, the necessary empirical cost data is needed. Therefore, justification for regulation of pay-TV based on the existence of significant decreasing costs, a fairly weak argument to begin with and dependent on several other conditions, cannot be made on the information contained within this thesis.

Inefficient Pricing (Indivisibilities)

It is sometimes claimed that one of the economically undesireable characteristics of pay-TV results from its inherently inefficient pricing behavior.[6] As mentioned in the previous chapter, efficient resource allocation requires that prices reflect marginal costs, ignoring second best considerations, for only then can consumers evaluate the true opportunity cost of any purchase and thus through their purchase decisions guide scarce resources into those uses which will maximize the satisfaction gained from those resources.

However, because of the indivisibilities associated with television programming, marginal cost pricing could only be adopted by the television industry if revenues could be raised from some source other than consumer sales—a purely pay television system could not adopt marginal cost pricing. The reason for this is that the costs of providing a program constitute a single lump sum of common costs; this gives rise to the problem that the unit of production (which is the basis of cost incurrence) is larger than the unit of sale, and thus the marginal cost of each individual viewer considered alone is essentially zero (does not include any set-up costs) while the cost of the unit of production is not zero per individual viewer.

Because of these indivisibilities associated with television programming, the positive prices charged in a pay-TV system results in a reduction of resource efficiency—some viewers will be excluded from the market even though there will be no corresponding reduction in resources.[7] And any exclusion of viewers will result in a decrease of total satisfaction to the viewing audience. Thus, the argument concludes that the positive price a pay-TV system would have to charge results in an economically inefficient allocation of resources, and therefore government intervention may be warranted to ensure proper price performance.

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[6] See: Noll, Peck and McGowan, Economic Aspects of Television Regulation, p. 134, and M. Spence and B. Owen, "Television Programming, Monopolistic Competition and Welfare," Quarterly Journal of Economics 91 (February 1977): 104.

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[7] Data from the Hartford experiment demonstrates that the largest proportion of buyers excluded from the market because of above-marginal cost pricing comes from the lowest income group (assuming that the Hartford population approximates the national distribution):

TABLE 7

HOUSEHOLD RESPONSE TO HARTFORD PAY-TV EXPERIMENT, BY INCOME GROUP, 1963-65

Annual Income	Percent of Subscribers	Percent of U.S. Households, 1965
Under $4,000	1.5	33.6
$4,000 - $6,999	40.8	25.2
$7,000 - $9,999	43.3	20.6
$10,000 - and over	14.4	20.5
All Groups	100.0	100.0

Source: "Subscription Television," hearings before the Subcommittee on Communications and Power of the House Committee on Interstate and Foreign Commerce, 90 Cong. 1 Sess. (1967), p. 265; U.S. Bureau of the Census, "Current Population Reports," Series P-60 (1967).

However, in an article published in 1964, Jora Minasian has argued that the maximization of the value of scarce resources may in fact require the prevention of non-paying viewers from consuming television services.[8] One of the problems with the previous argument is that a marginal cost pricing rule does not induce an optimal composition of output in the case of production indivisibilities.

Because a television program, once on the air, has a marginal cost of zero for an additional viewer, any output combination would be deemed Pareto optimal if a zero price were charged. The marginal cost pricing rule would define all output combinations as optimal regardless of the quantity and quality of programs. Thus:

> A pricing rule that takes the kinds of output as given cannot be expected to shed light on the nature of resource allocation, and, moreover, should not be identified with the optimum principle for resource allocation...the dictum that price should equal zero is independent of the value of television output.[9]

Minasian argues that the optimum principle provides no economic criterion for evaluating total resource utilization in television broadcasting because the marginal cost pricing rule does not allow the selection of those resource uses which would maximize the value of television services; it does not allow a viewer to bid for programs which would provide him with a more valuable alternative.

Perhaps the ideal solution in terms of resource allocation, if it could be implemented, would be one in which the nature and quantity of television output is determined by direct competition by viewers armed with their dollars, but, once broadcasted, the reception of programs would be made "free".

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[8] J.R. Minasian, "Television Pricing and the Theory of Public Goods", Journal of Law and Economics (October, 1964): 71-80.

[9] Ibid., p. 73.

The current advertiser-supported television system offers television programming at a zero price, but one cannot say that such marginal cost pricing results in an optimal allocation of resources since the pricing mechanism is not responsible for determining the quantity and quality of output production. The "free" television system uses another mechanism for the determination of output, and until the performance of this mechanism has been analyzed one cannot really criticize pay-TV for distorting resource allocation efficiency any more than the free television system simply becuase it charges a price above marginal cost.

Because marginal cost pricing rules cannot be used as an effective guideline in evaluating resource allocation efficiency in the television programming market, we have to turn to other criteria of optimal resource use in determining whether the pay-TV industry should be regulated to ensure better resource allocation. Because pay-TV and advertiser-supported TV are both second-best outcomes (as a result of the production indivisibilities associated with television programming), their performance in regards to resource efficiency will be evaluated here using criteria of optimality based on welfare.

Concepts of welfare have many dimensions and different alternative measures (none of which are perfect). Ignoring the associated imperfections, total surplus will be used here as a measure of welfare in determining how social welfare is increased or decreased by alternative pricing behaviors in the television programming industry. Total surplus is the gross dollar benefits of programs minus the variable cost of supplying these programs. In other words, it is the amount consumers in total are willing to pay in excess of the program's real avoidable cost. One important factor affecting welfare in the debate of pay-TV versus free-TV that will be ignored here will be the distribution of benefits.

Prices and revenues are what attract resources in a market system and determine where resources are used. In the free-TV system potential advertising revenues in relation to costs are what determine the amount and types of programming supplied. The uniqueness of free television programming as compared to most consumer products stems from the fact that revenues are not directly obtained from the consumers of the product through the charging of a positive price. Rather, consumers are provided the program at a zero price in order to generate the maximum audience size which in turn determines the revenues for program producers through advertising rates.

Optimum rules for resource allocation are therefore different. Optimal resource allocation will occur if advertising revenues are equal to the value of a program to consumers.[10] If, for example, the revenues generated through advertising rates understate the total value to consumers, then some programs with a potential positive surplus will not be offered.

And there is no reason to expect advertising revenues to be equal to the social value of the programming, as advertising rates are a function of the relative effectiveness of television advertising and the rates of competing advertising mediums. In fact, Noll, Peck and McGowan, among others, conclude that the value to consumers of television programming in general far exceeds the television revenues received from advertisers,[11] resulting in under-production by program producers.

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[10] Spence and Owen, "Television Programming, Monopolistic Competition, and Welfare," pp. 104-05.

In a pay-TV system, however, program broadcasters can appropriate a larger fraction of the surplus generated by a program through the charging of a positive price. In such a case, producers' revenues will more nearly reflect consumers' benefits, resulting in the provision of a quantity of programs that is closer to the optimum. Pay-TV results in the closest "supply" relationship to the source of "demand".

Prices in a pay-TV system are likely to display a tendency to reflect demand elasticities more than costs, as will be discussed a little further on, and revenues can be expected to approach the value placed on programming by consumers. There will then be a tendency to provide programs up to the point where the cost of programming equals the real value to consumers of programming as reflected in revenues gained from consumers (ie. where marginal costs equal marginal benefits).

In an advertiser-supported television system, on the other hand, the value of the programming to consumers is not a direct factor in determining program quantity and type; value is only partially reflected in audience size which in turn affects advertising revenues. Pay-TV may thus have a more desirable effect on the allocation of resources to and among the different types of television programs.

However, while a pay-TV system appears to perform better in regards to resource allocation, neither system is ideal. Pay-TV also results in some distortion in resource allocation efficiency, the degree of which depends on the nature of the prices charged and the demand characteristics of programs. (The choice between pay-TV and advertiser-supported TV is a choice between second-best outcomes.)

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[11] Noll, Peck, and McGowan, Economic Aspects of Television Regulation, pp. 22-23 and 30-32.

As stated before, pay-TV broadcasters can appropriate a larger fraction of the surplus generated by a program through the charging of a positive price. However, because a pay-TV firm faces a downward sloping demand curve for its programming the charging of a positive price for any program cannot appropriate all of the potential surplus, and the revenues raised will only be a portion of the total dollar benefits generated by a program. It is therefore possible that a program could not raise sufficient revenues to cover fixed costs and thus would not be produced even though it would make a positive contribution to total surplus. As a result, distortions from the optimum will occur.

This result emerges in a simple mathematical model of a monopolistically competitive pay-TV industry in which television programs are offered in a one-period context.[12] Let x_i be the number of viewers of the i th-program type resulting from a price p_i, and B(x) the gross dollar benefits of all viewers (the summation of all individual reservation prices):

$$B(x) = \sum \phi_i (x_i)$$

,where ϕ_i is the reservation price of the i th-program

Consumers will choose to view programs in a manner which will maximize the net benefits (NB) to them:

$$\text{Max} \left[NB = B(x) - p_i x_i \right]$$

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[12] Based on the Spence and Owen model in "Television Programming, Monopolistic Competition, and Welfare," pp. 106 - 10.

The first-order (necessary) conditions of this function are:

$$\frac{\partial(NB)}{\partial x_i} = B_i - p_i = 0$$

$$\therefore \; B_i = p_i$$

This gives us the familiar condition that when net benefits are maximized, marginal benefits equate with the marginal cost to viewers.

Total surplus, T(x), is the gross dollar benefits of the programs minus the cost of supplying them:

$$T(x) = B(x) - \sum C_i$$,where C_i is the variable cost of producing and delivering program i

$$= \sum \phi_i(x_i) - \sum C_i$$

The profits, π, of the pay-TV firm supplying the i th-program is:

$$\pi_i = p_i x_i - C_i$$

$$= B_i x_i - C_i$$

$$= \phi_i'(x_i)x_i - C_i$$

It is assumed that each firm maximizes profits by setting x_i, and entry occurs until all profitable programs are supplied.

$$\text{Industry Profits} = I(x) = \sum \pi_i = \sum \left[\phi_i'(x_i)x_i - C_i\right]$$

$$= \sum x_i \phi_i'(x_i) - \sum C_i$$

The determination of the competitive market equilibrium for the model allows a comparison with the socially optimum situation. The difference between T(x) and I(x) is that the $\phi_i(x_i)$ in T(x) is replaced by $x_i\phi_i'(x_i)$ in I(x). If we assume a downward sloping demand curve for programs (ie. $\phi_i(x_i)$ is concave), then $\phi_i(x_i) > x_i\phi_i'(x_i)$ because $\phi_i' < 0$. Hence, a program's contribution to toal surplus is greater than the revenue produced, and it is possible that T_1 can be positive when $\pi_1 < 0$ (in which case the program would not be supplied even though it added to total surplus). Revenues would only equal a program's contribution to total surplus if perfect price discrimination were possible. In this case, charging each viewer his own individual reservation price would generate revenues equal to the social value of the programming, thus inducing producers to supply a quantity and quality of programs up to the point of social optimality (where all programs whose social value exceeds costs is produced).

The next question which one might like to ask is: what type of programs would not be offered in a pay-TV system because of the reason stated above (even though the program would make a positive contribution to total surplus)? Spence and Owen addressed themselves to this question,[13] and the results which emerge from their mathematical manipulations reveal the bias to be towards programs with steep inverse demand functions. This result has much intuitive appeal, as programs with steep inverse demand functions will generate a lower fraction of the total benefits of a program in the form of revenues if a single price is charged (because reservation prices fall off rapidly), and thus the revenues generated will not be sufficient to attract a justifiable amount of program producers into the industry. However, this bias towards programs with low price elasticities is considerably less than the bias involved with free-TV which almost completely ignores price elasticity in the determination of its programming mix.

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[13] Ibid.

We have considered only total surplus so far, but from a political viewpoint it may be desirable to focus on consumer surplus (the benefits to the public) rather than on total surplus (which includes benefits to producers). If this approach is taken, what are the effects on consumer surplus of the pricing behavior of pay-TV?

We can use a type of "second-best" differential pricing scheme to determine "optimal" behavior in regards to the maximization of consumer surplus, and then use this as a benchmark in evaluating pay-TV performance.

Because of the indivisibilities associated with television programming it is necessary to vary prices from marginal cost in order to generate revenues sufficient to cover the costs of all programs which yield a positive contribution to total surplus. Given that a first-best solution is not feasible in a purely market context, a second-best solution might then call for a minimum distortion in demand (a maximization of consumer surplus subject to revenue constraints).

If we consider a distortion in demand as any departure in demand patterns from those that result from prices set at marginal cost (MC), then the least distortion will be caused if the largest price changes fall on those programs whose demand is most inelastic (ie. those programs whose quantity demanded will not change markedly in response to a departure from MC pricing). Thus, a type of discriminatory pricing scheme in which prices are set in inverse proportion to the individual demand elasticities of programs which yield a positive contribution to total surplus would maximize consumer surplus given that the amount of producers' surplus generated is sufficient to induce producers to supply all justifiable types of programming.

According to a theorem originally derived by A. Manne[14] and developed by Baumol and others,[15] if prices equal to MC do not allow a firm to cover all of its costs, then consumers' surplus is maximized if prices are set so that the ratio between $\frac{P - MC}{P}$ (where P is equal to price) for each product is equal to the inverse ratio of the respective price elasticities of demand (assuming the cross-elasticites of demand are zero).

Since consumer surplus is maximized when prices equal MC, the amount of surplus sacrificed is minimized when the loss of consumer surplus that would result from a marginal price increase is equalized for all programs. Thus, if we begin from a situation in which prices are equal to average total cost, prices should go up for the programs with the relatively inelastic demand and down for the programs with a more elastic demand until the $\frac{P - MC}{P}$ ratios for each class are inversely proportional to their respective elasticities of demand. The resulting prices will reduce sales in all programs by the same proportion below what their respective level be if all prices were equal to MC.

This form of price discrimination will allow a pay-TV firm to raise sufficient revenues to cover total costs, while permitting an output that is closer to the optimum (there is a tradeoff between consumer and producer surplus, but the constraint will allow sufficient producer surplus to supply all programs which yield a positive contribution to total surplus).

Because there is a tradeoff between consumer and producer surplus (lower prices will increase consumer surplus and decrease producer surplus), a pricing scheme which involves the maximization of consumer surplus is likely to involve a loss in producers' surplus (the degree of tradeoff involved being dependent on the particular demand elasticities for programs). Producers would therefore have to be regulated to act accordingly — a pay-TV firm would have to be regulated to cover only costs (earning no supernormal profits) and to price below average cost for highly priced elastic programs. But how close to this optimum would pay-TV come if left unregulated?

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[14] A.S. Manne, "Multiple-Purpose Public Enterprises — Criteria for Pricing," Economica 19 (August 1952): 322-26.

[15] W.J. Baumol and D.F. Bradford, "Optimal Departures From Marginal Cost Pricing," American Economic Review (1970): 265-83.

Because severe price competition in the pay-TV industry appears unlikely, prices will tend to reflect the general demand intensities for programs.[16] Revenues will be maximized when the highest prices are charged for programs with the more inelastic demand, and thus, according to the previous pricing scheme, the effects on resource allocation will approach the second-best solution if firms do not earn excessive supernormal profits. Thus, regulation of profits, by allowing revenues to only cover costs, may lead in the direction of the maximization of consumer surplus (although the non-price competition associated with this scheme is not desirable from a technical efficiency viewpoint, as price competition is probably the best means by which to weed out the less efficient producers and induce firms to lower their costs).

The type of charge used in a pay-TV system is another important factor in determining its performance in terms of resource efficiency. A per-program charge as opposed to a per-channel charge would result in better resource allocation efficiency amongst the different types of television programs. If a per-channel charge is used the resulting return per program will likely be based on a percentage split of the total subscription fees for the channel (after fixed costs and other deductions), unless individual program popularity can be determined. Thus, any program will receive a fixed return regardless of the merit of the program. In this case, the more popular programs will be subsidizing the less popular programs, resulting in the underproduction of the more popular programs and the overproduction of the less popular programs.

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[16] The likely pricing behavior of the pay-TV industry will be discussed in the next section.

If a per-program charge is adopted, on the other hand, audience response to the individual programs can be measured. Revenues would not be averaged, and programs would receive a return based on their own individual performance. Thus, the less popular programs will be eliminated because of a low return, and their resources will be allocated to the more popular programs.

Because the benefits of a per-program charge as opposed to a per-channel charge accrue directly to a pay-TV system, the industry would not have to be regulated to adopt a per-program charge. As will be discussed in the next section, the reason why the pay-TV industry might not adopt a per-program charge is that the necessary hardware is sufficiently more expensive than the hardware needed for a per-channel charge.

Political Arguments for Regulation

This section discusses the political arguments for regulation of the pay-TV industry based on the threat to conventional broadcasting and the "siphoning" of free television programming by pay-TV, externalities, and equity considerations. Although the argument involving externalities is based on an economic justification for regulation, the importance of this argument rests on the values placed by the political process on the relevant external costs and benefits involved.

The Threat to the Current Television System

Most opponents of pay-TV are concerned primarily with the direct threat pay-TV offers to the present conventional television system (a sort of negative externality). They claim that the principal effect of pay-TV in the end will be that consumers will pay for programming they now receive for "free" (no direct price).

Pay-TV will outbid the networks for some shows which cannot be duplicated, and thus acquire programming that would normally be shown on conventional television. (In fact, historical experience has shown that much of pay-TV programming involves sports events and movies, two types of programming that are very important to conventional television.) In addition, pay-TV further threatens the current broadcasting system because Canadian broadcasting is heavily dependent upon advertising revenues, and this source of financing will be diminished as a result of the increased audiences fragmentation brought about by pay-TV.

Thus, many feel that the pay-TV industry should be regulated so as to ensure the protection of our current advertiser-supported television system. It is claimed that both the industry and consumers have much to lose because of the "siphoning" of television programs and the replacement of the "free" TV system by pay-TV. In the U.S., an FCC report stated that the public's "tremendous investment...in television receivers based on the expectation of free service ought to be protected and the millions of viewers who rely on the service for free entertainment should be permitted to do so."[17]

As concerns the loss in advertising revenues brought about by increased audience fragmentation, pay-TV will certainly pose some threat to the current broadcasting system — but the effect may be minor. The Stanford Research Institute, in its analysis of the consumer demand for television in the U.S., estimated some upper bounds on the audience loss of free-TV as a result of pay-TV (see Table 8).

TABLE 8

POTENTIAL FREE-TV AUDIENCE LOSS

	Projected Upper Bound: Pay-TV viewing as a percent of total prime time viewing
1974	0.0%
1977	0.5
1979	1.4
1982	2.8
1985	3.0

Source: Stanford Research Institute, Analysis of Consumer Demand For Pay Television (Final Report); prepared for: Office of Telecommunications Policy (May 1975), p. 111.

Pay television viewing hours were calculated by dividing the projected revenues by the estimated average price per hour of $1. The resulting percentages of total viewing hours are not substantial and are even likely overstated because of the assumptions used in their derivation.[18] Thus, these relatively low percentages indicate that, along with a percentage increase of about 10 percent by 1985 in free television viewing solely as a result of population growth, any real decline in free-TV viewing from current levels as a result of pay-TV is unlikely.

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[17] F.J. Kahn, ed., Documents of American Broadcasting, 2nd ed. (New York: Appleton-Century-Crofts, 1973), p. 617.

What also has to be assessed is what the revenue loss associated with this audience loss will be. While a relationship almost certainly does exist between audience loss and revenue loss, which in turn leads to a cutback in programming, the exact nature and extent of this relationship is not really known. The impact of either pay-TV or cable-TV on the broadcasting industry has been a popular issue in the past, but little data has actually been generated on the proposed relationship between the two.[19]

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[18] The Stanford report assumed that pay-TV would not result in any increase in total viewing hours by consumers, and thus every hour of pay-TV viewing would correspond to the loss of exactly one hour of free-TV viewing (in reality, the increased quantity and variety in television programming brought about by pay-TV will likely increase total viewing hours). Also, it was assumed that all of pay-TV viewing would occur during prime time, when free-TV attracts its largest viewing audience. And finally, it was assumed that subscription-TV will be viable along with pay-cable; if it is not viable, total pay-TV viewing hours will be less.

[19] See: "Just the Facts: FCC is going after hard data on economics of cable, broadcast," Broadcasting, 13 June 1977, pp. 28-29. Audience fragmentation is obviously an important factor in the relationship between audience and revenue, but there are many factors involved which will affect this relationship. For example, the source of revenue is an important factor — audience fragmentation will have a different effect on revenues from local advertisers than on revenues from network compensation. Also, the type of audience measure used in selling spot time to local, regional, and national advertisers is important. There are certain problems associated with collecting data on audience fragmentation, and different methods of collecting data will yield different results. Thus, the impact of audience fragmentation on revenues can only be precisely measured if all the factors affecting revenue are taken into consideration.

Turning to the problem of program "siphoning", there is little doubt that pay-TV, in the absence of regulation, will attract some programs away from free-TV, and viewers attracted to pay-TV programs are likely to watch less programming on the free-TV system as a result. The two forms of television will be in competition for certain programs and audiences (this in itself may be a good thing, because competition will be increased in the relatively concentrated television industry). The government proposal to establish a national network entity would give pay-TV considerable clout in its ability to attract programs away from free-TV.

The argument is sometimes raised that the degree to which pay-TV will offer programs similar to those currently offered on free-TV will depend greatly on the type of charge viewers will have to pay for pay-TV programming. There are basically two ways in which the likely pricing behavior of the pay-TV industry can be predicted. One can either look at the past performance of the limited cases in which pay-TV has operated and try to extrapolate this behavior into the future, or one can use economic theory and knowledge of industry structure or expected structure in determining the likely pricing conduct of the industry.

Noll, Peck and McGowan have ignored the method of examining past experience in predicting the likely pricing behavior of the pay-TV industry. One might reasonably expect that prices for individual programs or channels offered by pay-TV be set so as to maximize industry revenues, in the absence of any price competition. If this is so, prices should be individually set in proportional relation to the price elasticities which will vary amongst the different types of programs. Programs with lower price elasticities should be offered at higher prices, and the lowest prices should be charged for programs with the highest degree of price elasticity

— such a pricing rule will maximize total revenues for the industry.

However, this type of behavior implies perfect knowledge or information on the part of the firms in the pay-TV industry concerning the price elasticity or demand curve for each program. According to Noll, Peck, and McGowan, such pricing behavior is unlikely because of the uncertainty in predicting price elasticity (or "popularity" as they somewhat erroneously refer to it as) before the program is offered.[20] They argue that the "popularity" of a program offered in the past is likely to change from season to season and even during the course of a season, and thus past experience cannot be used as a reliable estimator of future popularity.

In addition, a further complicating factor is that new programs may be intentionally priced lower than the optimal pricing rule would prescribe so as to maximize exposure to the viewing public. Thus, attempts to increase the long-run demand for a particular show may result in a pricing behavior that intially does not maximize revenues. Noll, Peck and McGowan argue that all of these uncertainties taken together give rise to the strategy of pay-TV firms not charging price premiums on the more "popular" programs.[21]

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[20] Noll, Peck, and McGowan, Economic Aspects of Television Regulation, p. 131.

[21] This prediction of little price variability, they claim, is supported by behavior in similar industries, such as "newspapers, movies, books, phonographic records, the theater." (Ibid., p. 131). However, it can be questioned whether these particular industries do indeed exhibit similar pricing behavior because of similar conditions. Casual observation suggests that price premiums are in fact attached to books which are "popular". The newspaper industry, on the other hand, is not "similar" to television in that a firm generally produces one more-or-less homogeneous product; it does not offer consumers a variety of different types of products. The movie and theatre industries are perhaps the best supporter of the NPM argument, and the phonographic record retailing industry may support the argument, although the retaining conditions faced in the industry are significantly different.

Such behavior has important implications. According to Noll, Peck and McGowan, if price differentials do not exist between different types of programming, then the network entity would tend to select that mix of programming which would maximize audience size. In other words, pay-TV programming would tend to be the same as currently offered in the conventional advertiser-supported television industry, and thus the only difference is that consumers would now be paying directly for what they initially received at a zero price.

However, this argument by Noll, Peck and McGowan can be criticized on five grounds. First, and perhaps most important, the mix of programming that would maximize audience size at a positive price may not be the same as that which would maximize audience size at a zero price.[22] The degree of similarity or difference would depend on the particular shapes of the demand curves for programs.

Secondly, the free-TV system selects those programs which will maximize audience size (subject to cost constraints) because of the proportional relationship to advertising revenues. However, in a pay-TV system the programming mix which results in the maximum aduience size may not necessarily generate the maximum amount of consumer revenues, and therefore a pay-TV system may have no incentive to maximize audience size.

Thirdly, unless pay-TV outbids free-TV for programs which cannot be easily imitated (for example, CFL football), pay-TV programming can be expected to be substantially different as consumers will be unwilling to pay for a channel of programming if they can receive similar programming at a zero price.

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[22] S. Besen and B. Mitchell, "Noll, Peck, and McGowan's Economic Aspects of Television Regulation," Bell Journal (Spring '74): 306.

Fourthly, over time it is likely that experience can be used to obtain reasonable estimates of the price elasticities of the different types of shows offered. Finally, the historical experience does not support the proposition that prices will not vary among programs.

The reason why the industry, if left to itself, might not adopt a per-program charge is that the necessary hardware is sufficiently more expensive than the hardware needed for a per-channel charge.[23] If this is the case, the "optimal" pricing behavior may not involve a per-program charge.

Thus, it is difficult to speculate at this point in time as to the degree of per-channel or per-program pricing that will be adopted by the pay-TV industry. Also, the effects of the alternative pricing behaviors on program "siphoning" is likewise uncertain. Even if a per-channel pricing behavior is adopted by the pay-TV industry, individual channels might tend to specialize in specific types of programming (sports, for example), especially in the case of unlimited channels, and thus the elasticity of consumer demand curves could still be exploited resulting in a generally different mix of programming.

The argument that programs and audiences would be "siphoned" away from the conventional broadcasting system to pay-TV is essentially a problem of income redistribution between the two industries. As such, it is a highly political issue in nature and economics alone cannot say whether the resulting distribution is desirable or undesirable.

However, given the resulting distribution of income, the economic desirability of having viewers pay directly for television programs they used to watch for no direct charge can in principle be evaluated. There are two basic approaches to evaluation.

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[23] According to PTN (CRTC, COMMENTS: Pay Television, Comment #28 by PTN Pay Television Network, p. II-11) per-program hardware costs at least $125 per subscriber versus $55 for per-channel hardware.

The first method involves an individual assessment of each of the many economic variables which will be affected if pay-TV replaces free TV. On the "negative" side, you would have such factors or variables as the cost in dollars for pay-TV programming which is paid by consumers. The introduction of pay-TV would result in a massive income transfer from consumers to the television industry, as viewers would now pay for programming instead of receiving it at no direct charge. Also, consumers would be required to invest in the necessary equipment needed to receive pay television programming. Direct payment for programs would also result in reduced consumption of television programming, and a corresponding reduction in welfare. Also, if no advertising becomes characteristic of pay-TV, an efficient medium for advertising will be lost (and advertising serves a useful function to society as an informational source and sometimes as an entertainment source).

On the other side, the advertiser-supported television system generally results in increased prices of TV advertised products. Advertising is only undertaken, in general, if it is profitable for a firm to do so, and thus the amount spent on advertising is usually more than enough recouped in higher prices and sales.[24]

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[24] For empirical support of this proposition see: W. Comanor and T. Wilson, "Advertising, Market Structure and Performance," Review of Economics and Statistics (November 1967): 423-40. The author's conclude that: "On the basis of these empirical findings, it is evident that for industries whose products are differentiable, investment in advertising is a highly profitable activity." (p. 437). Also see footnote #39 in this chapter (p. 127).

If a pay-TV system is implemented, consumers will be able to recoup some of the income loss mentioned above in the form of lower prices for consumer products as less television advertising is done. (Although it is possible that if television opportunities for advertising diminish then advertisers may seek other mediums for advertising such as radio or magazines, and thus in the end the income transfer is essentially from the current over-the-air broadcasting system and consumers to both the pay-TV industry and other mediums of mass advertising.) Another negative aspect of the advertiser-supported television system involves the aggravation to consumers of television commercials.

As can be seen, there are many variables which should be evaluated, including such factors as the change in the mix of programming resulting from the emergence of a pay-TV system and the effects on efficiency in resource allocation (as was discussed in the previous section). However, because of the multiplicity of factors involved, it is difficult to evaluate the overall desirability of direct payment for television programming by consumers.

An easier and more general approach (and probably more accurate) to the evaluation of the economic desirability of any replacement of free TV by pay-TV, is to note the aggregative effect of most of these individual factors. Most of the factors mentioned above taken together will determine the extent to which pay-TV will replace the current broadcasting system. Pay-TV will generally only replace free TV to the extent it is more efficient in providing television services to the public. And, from an economic standpoint, "survival of the fittest" in our economy is desirable. If it were not more efficient pay-TV would not be able to compete with the current television system and draw away consumers from it.[25]

The threat to the current broadcasting system has produced severe political pressure on the government to restrict the growth of pay-TV, as discussed previously. A dilemma exists because economic efficiency requires adjustments which may be politically difficult.. It is the responsibility of the political process, therefore, to evaluate the hardships imposed upon the people in the broadcasting industry because of pay television.

However, the exact effect of pay-TV on our broadcasting system is not known for a certainty. There has been little quantitative research on the proposed relationship between the two systems, and more research in the area would be desirable before regulatory policies involving pay-TV are developed. One experiment that perhaps did throw a little light on this area, was the Etobicoke experiment here in Canada. As mentioned earlier, the use of pay-TV in this case generally appealed to "selective" tastes resulting in no readily discernible adverse effects on commercial television viewing. (Although the use of pay-TV by subscribers was not as extensive as one would expect.)

Every day people and resources in our economy are relocated amongst industries as most industries are either growing or diminishing in size. The fact that the broadcasting industry has a loud political voice does not really justify preferential political treatment in the author's opinion. In the end, pay-TV will only supplant the current television system to the extent it is a more efficient medium for transmitting television services, and thus prevention of pay-TV would only be promoting inefficiency and a halt to progress in favor of short run stability.

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[25] The problem with this approach to evaluating the economic desirability is that some important variables (externalities) may not have any influence on the success or failure of pay-TV.

Another aspect of this argument sometimes brought up is that the threat pay-TV offers to the current broadcasting system may result in a reduction of public or community service programming. It is claimed that if broadcasters face a loss in revenues they will be forced to cut costs, and public-service programming is likely to be one of the first to suffer the consequences of budget cutting.

From an economic standpoint, this is a very poor argument for regulation designed to restrict the growth of pay-TV. If public-service programming does provide benefits to society that are not internalized in a market, then the government should subsidize them to the extent of their benefit. A direct subsidization would be more desirable than the indirect subsidization which currently exists for public-service programming.

Also, if revenues to broadcasters are reduced, the market will adjust and it is possible that program suppliers may be forced to reduce their prices. It is possible that program suppliers are currently commanding monopoly rents, and a reduction in prices is possible without a corresponding loss in programs. For that matter, broadcasters may be earning monopoly rents so that a reduction in revenues need not necessarily mean a cutback in costs (although broadcasters will probably try to protect profit margins).

Externalities

Social externalities

The social externalities of cable and pay-TV can be quite significant and numerous because of the important and complex role television plays in our society. The wide range of possible externalities might even conceivably include the effect on Canadian unity:

> While people in the large metropolitan areas often receive upwards of a dozen different channels, those outside the major cities rarely receive more than two, and sometimes none at all. The consequence of this is to increase the disparities that already exist among regions, and to widen the cultural gap between rural and urban life. More broadly, this mistrust and alienation attendant on inequality of access contribute to a further weakening of the union and exaccerbate the problems that already face us as a nation.[26]

Perhaps the greatest externality of pay-TV, as claimed by most opponents of pay-TV in Canada, is the further infiltration of American programming and its effects on our cultural identity. A. Johnson, president of the CBC, has articulated this concern quite well.[27] Johnson claims no other country in the world allows the massive intrusion of a foreign culture that Canada does. While he feels Canadians do have a right to enjoy American programming, he is concerned with the effects of the massive foreign programming in disseminating an American set of values to Canadians, and he feels pay-TV will just add to this problem:

> Why in Heaven's name are we seriously considering rushing into pay-TV, for instance, when clearly the industry proposals made so far are utterly

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[26] Canada, Dept. of Communications, Speech by Jeanne Sauve to The Canadian Association of Broadcasters (18 April 1977).

[27] "Volume Control needs adjusting," Edmonton Journal, 25 June 1977, p. 5.

> dependent on American films and programs? The rationale offered is that some of the profits would be used to encourage Canadian production. But, in fact, the funds put into Canadian production would in no way stem the flood of increased American films and programs coming into Canada through pay-TV.[28]

Thus, it boils down to a case of the legitimacy of Canadian sovereign identity versus consumer sovereignity and the functioning of the free enterprise system — a highly political issue in nature. The government must somehow evaluate the importance of the cultural impact of pay-TV on Canadian society.

A partial solution to this problem would be to impose a Canadian content rule upon pay television. A Canadian content quota would not only help nullify one of the negative social externalities of a pay-TV system — namely, the further infiltration of American programming and its effects on our culture caused by the massive exposure to an American set of values — but it would also encourage additional Canadian program production.

This is a political solution to the problem, and the benefits to our culture and the Canadian program production industry of requiring pay-TV systems in Canada to carry a substantial proportion of Canadian content would have to be somehow assessed and compared to the cost to pay-TV systems and programming quality in general of such a quota. (A Canadian content quota would probably reduce subscriber revenues by a considerable amount.) Also, it should be taken into consideration that if pay-TV is to be a provider of funds to the Canadian program production industry, which will be discussed in the next section, it should perhaps be permitted to generate the maximum subscriber revenue possible by offering only the most attractive programming available regardless of its national source.

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[28] Ibid.

Effect on the Canadian program production industry

One of the desirable and politically important "side effects" of the pay-TV industry may be the impetus it gives to the underdeveloped Canadian program production industry. This impetus will result primarily from the portion of the substantial revenues pay-TV is likely to generate that will be allocated to Canadian program production.

In a speech given in June 1976 by the Minister of Communications, Jeanne Sauve, this possibility was analyzed:

> ...there are about 2,700,000 cable television subscribers in Canada. If only 15% of these subscribers elect to take pay television at $8.00 per month — the average charge in the United States — gross revenues would amount to some 39 million dollars per year. You will recall that the CRTC and a representative group of cablecasters have suggested that 15% of gross pay-TV revenues could be devoted to Canadian program production. On that basis, close to $6 million would accrue per year.
>
> In actual fact, pay television penetration rates of 35% are probably attainable, resulting in funds for programming of about $13½ million annually. When one considers that the CTV network last year spent about $13 million alone on Canadian programs including news, sports series, and variety shows, it becomes obvious that pay television revenues could have an enormously positive impact on Canadian program production.[29]

However, while the potential certainly exists for the allocation of substantial revenues to the Canadian program production industry, a few of the figures have to be questioned.

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[29] Canada, Dept. of Communications, "Pay Television," speech by Jeanne Sauve to the Canadian Cable Television Association, (June 2, 1976), p. 3.

To begin with, penetration rates of 35% may or may not be overly optimistic. According to one report prepared by the Canadian Broadcasting League based on data from 131 American cable systems with a per-channel television service,[30] pay-TV penetration rates as a percentage of cable subscribers average 24.1 percent. In a more neutral and rigorous analysis of pay-TV demand by the Stanford Research Institute, an upper bound on current per-program pay-TV was estimated to be 40 percent of cable subscribers.[31] The estimate was based on data that was derived from the operations of U.S. cable systems which serve more than 50 percent of the households passed.

Also, it is unlikely that pay-TV will be available in all cable systems in the country, particularly in the initial phases of its development, and thus total revenues would be less than those calculated by Mrs. Sauve. The analysis of pay-TV by the Stanford Research Institute noted that, while the rate at which cable systems will adopt pay-cable service is by-and-large an open question, actual adoption rates in the U.S. have been very slow.[32] They cited high capital investment requirements as being one of the major deterents to high adoption rates. The Stanford report nevertheless assumed in its analysis what they considered "very rapid" and "overstated" adoption rates — namely, that by the end of 1975, 9 percent of all cable systems will offer pay-TV with an addition 9 percent being offered in each of the following years. If these figures are applied to the Canadian situation, pay-TV will be available in most cable systems in the country only by the late 1980's.

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[30] CRTC, COMMENTS: Pay Television, "Pay Television: a considered proposal," Comment #52 by Canadian Broadcasting League.

[31] Stanford Research Institute, Analysis of Consumer Demand for Pay Television, p. 68.

[32] Ibid., p. 89.

In addition, the consumption of pay television services by viewers is likely to result in a loss of revenues to the present conventional broadcasting system, and thus revenues may be taken out of Canadian program production by broadcasters that would not otherwise be withdrawn. Thus, while pay-TV may directly inject the revenue spoken of by Mrs. Sauve into Canadian production, the amount of these revenues must be examined in relation to the total broadcasting system and the loss in revenues to Canadian production because of the decrease in advertising revenues.

It should also be kept in mind that if regulation requires pay-TV to allocate a predetermined percentage of gross revenues to the production of Canadian programs, making use of Canadian talent and resources, there will be a cost attached to these funds. The fact that the industry would have to be regulated before these funds are allocated to the Canadian program production industry implies that this allocation would not occur in the absence of regulation. If this is the case, then there is a cost attached to these funds in terms of the amount over and above the funds needed to acquire similar programming from a foreign source.[33] Thus, the pay-TV system would be subsidizing the Canadian program production industry to the extent of their inefficiencies and inabilities in producing programs as compared to foreign producers. The fact that very few Canadian television programs are exported throughout the world implies that Canadian programs currently fall below international standards.

There is little doubt that the Canadian program production industry needs an injection of substantial new funds to raise it to a more competitive position. Because of Canadian audience exposure to American programming, Canadians demand high quality programming — something the current Canadian program production industry is providing very little of. And the funds needed to produce more competive programs cannot be expected to come from the current advertiser-supported system because advertising revenues per program are substantially below American advertising revenues.[34] (There are several factors which contribute to this condition, including the smaller Canadian television market and the fact that Canadian companies spend less on advertising per capita than do their

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[33] This analysis assumes that pay-TV firms acquire foreign (American) programming because the expenditures would be less than the amount which would have to be allocated to Canadian producers to get programming of similar quality. However, there may be institutional reasons why pay-TV firms turn to American producers. For example, one of the largest participants in the PTN Pay Television Network is Canadian Cable Systems who also own Famous Players Corp. in conjunction with Gulf and Western which in turn owns Paramount Pictures Corp., a major American film producer. Thus, it may be unlikely, for institutional reasons, that Canadian Cable Systems, through PTN, would allocate funds to Canadian film producers whose films would be competing with those American films offered by Canadian Calbe Systems through the Famous Players Corp.

[34] CRTC, COMMENTS: Pay Television, Comment #22, by CTV Television Network Ltd., p. 2.

American counterparts with television accounting for a smaller percentage of the total advertising budget.[35])

However, one also has to question how "substantial" these pay-TV revenues will be in light of the enormous production costs of producing television programs. Table 9 provides some estimated costs for programming produced for Canadian television networks:

TABLE 9

PROGRAM COSTS FOR BROADCAST NETWORKS

Program	Network	Length	Cost/program
Witness to Yesterday	Global	½ hour	$ 12,000
Human Journey	CTV	1 hour	$ 80-100,000
Performance	CBC	1 hour	$ 80-100,000
Excuse My French	CTV	½ hour	$ 40-60,000
Swiss Family Robinson	CTV	1 hour	$ 65,000
Wildlife Cinema	Global	½ hour	$ 60,000
Tan Kukal	CBC	½ hour	$ 20,000
Beachcombers	CBC	½ hour	$ 40-60,000

Source: Reprinted from "PAY TELEVISION: a considered proposal" by the Canadian Broadcasting League. CRTC submissions, COMMENTS: Pay Television, Comment #52, October 1976, p. 24.

The average cost per hour for these television programs is approximately $87,000, and even these costs may be substantially lower than the production costs needed for the type of high-quality programming required before consumers will be willing to pay separately for them in a pay-TV system. If the projected $13 million (which has been shown to probably be an inflated figure) were to be divided equally between feature films and TV programs, and program budgets were $100,000 per hour, a total of 65 hours of programs per year could be produced, or a mere 75 minutes per week! This can hardly be deemed a significant boost to the Canadian program production industry. These facts have led many to conclude that a much larger revenue base than that provided by pay-TV is needed to achieve significantly greater amounts of better Canadian programming.

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[35] Ibid.

However, there are other factors involved in addition to the creation of extra revenues that will allow pay-TV to provide an impetus to the underdeveloped Canadian program production industry. Mrs. Sauve also points out that pay-TV could result in wider viewing opportunities for Canadian programs, especially feature films.[36] In a brief submitted to the CRTC the Directors Guild of Canada had this to say:

> ...the GUILD sees it (pay-TV) as the first opportunity in our history for independent Canadian Producers to have direct access to our own market — and through our own market to the international marketplace...For Canadian producers, PAY-TV is a "once-in-a-lifetime" opportunity to break away from the stranglehold imposed by low-budget production and to develop not only a wide range of new subject matter and treatment but to broaden the spectrum of film and television programs from those currently being produced in Canada.[37]

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[36] Although viewing opportunities may be increased, opponents of pay-TV claim that it is invalid to assume that Canadian feature films will form a regular part of a pay-TV program schedule because five or six movies a year is currently the limit of the industry's capacity in Canada, and thus American movies and sporting events will dominate pay-TV programming. (See J. Waters, "CBC president says $2 billion figure incorrect", Edmonton Journal, 1977.)

[37] CRTC, COMMENTS: Pay Television, Comment #51 by Directors Guild of Canada, pp. 1, 3.

The establishment of a national pay-TV network entity, one of the proposed options of the government, would provide another "shot in the arm" to the Canadian program production industry. The network could be specifically designed so as to enhance the production, exhibition, and promotion of Canadian programs.

Also, if a network entity is established, the prospect of nationwide coverage increases, and producers would plan more expensive shows necessary to obtain nationwide coverage. The resultant improvement in quality would in turn help fulfill another responsibility of the network, which is the sale of Canadian programs to non-Canadian program distributors.

The government feels, as mentioned in the introduction, that it is desirable to regulate the pay-TV industry so as to ensure the production and sale of "high-quality" Canadian programs. From an economic viewpoint, such regulation can only be justified if it helps alleviate market imperfections in the Canadian program production industry. If the Canadian program production industry is floundering because of lack of efficiency, for example, then it is difficult to economically justify its promotion as resources could be put to more productive uses in other, more efficient industries. However, these market imperfections may result from the lack of viewing opportunities for Canadian programs, or lack of financial backing, and may not be indicative of the efficiency of the Canadian program industry. Also, positive externalities may be associated with the production of "high quality" programs.

In conclusion, the existence of a pay-TV industry is likely to have a favorable impact on the Canadian program production industry in some way, and thus some type of governmental promotion of the industry may be justified. However, the extent of this impact and its political desirability will have to be more thoroughly assessed before developing regulation policies designed to encourage or discourage the development of the pay-TV industry and its favorable effects on the Canadian program production industry.

Equity Considerations

The government may either wish to aid or restrict the growth of pay-TV on equity grounds. A pay-TV system may or may not be more equitable than the present advertiser-supported television system depending on the definition of equity that is employed. Because concepts of equity involve value judgements, several different definitions of equity may exist. Traditionally, however, there are two opposing principles or economic approaches to the concept of equity — the "benefit" principle and the "ability to pay" principle.

The benefit principle argues that equity requires payment for services in accordance with the benefits received. In other words, people should pay for what they get. Using this definition of equity, a pay-TV system is more equitable than our present advertiser-supported or "free" television system where all consumers, whether they consume television services or not, pay indirectly for the television programs offered in the form of higher prices for advertised products.[38] Products or services advertised on TV will generally have higher prices as a result of the additional cost of advertising to the firm supplying the product or service.[39]

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[38] "Free" TV is not really free in the sense that advertising costs which make television programming available are, in most cases, eventually passed on to the public with a profit margin attached. The term "free" in this case can be more accurately described as "no direct cost".

Payment for television programming in this case is not in relation to benefits received, but rather it is in proportion to the amount of TV-advertised products purchased by a consumer. In a pay-TV system, on the other hand, only television viewers pay for the programming, and the amount of payment for any viewer is in proportion to the amount of television services consumed.

However, may people consider a pay-TV system to be less equitable because it excludes potential viewers from viewing television programming if they lack the ability to pay for the programming. Poor people would be excluded from consuming as much television programming as rich people,[40] and this is not fair or equitable in terms of the "ability to pay" principle of equity which requires payment for goods and services only on the basis of the consumer's ability to pay.

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[39] This might not be true in all cases. In some instances advertising will be effective in increasing sales to the point where either unit costs can be lowered through the achievement of scale economies or a lower margin is needed to increase total profits. And thus the degree to which prices increase or decrease will depend on the price elasticities involved.

However, in the majority of cases the price of a TV-advertised product will rise as a result of advertising. The purpose of advertising is to sufficiently differentiate the product so as to achieve a degree of monopoly power which will allow prices to be raised so as to increase profits regardless of whether costs have risen or fallen. In a major empirical analysis of the role of advertising, Comanor and Wilson discovered that: "...for industries where products are differentiable, investment in advertising is a highly profitable activity. Industries with high advertising outlays earn, on average, at a profit rate which exceeds that of other industries by nearly four percentage points. This differential represents a 50% increase in profit rates. It is likely, moreover, that much of this profit rate differential is accounted for by the entry barriers created by advertising expenditures and by the resulting achievement of market power." (See: W. Comanor and T. Wilson, "Advertising, Market Structure and Performance", Review of Economics and Statistics: 437.)

Also, much of advertising is self-cancelling. For example, if each of the ten firms in the dog-food industry advertise their product they will not all increase sales as an increase in sales in one firm generally results in a decrease in sales in other firms as customers are attracted away from one firm's product to another. New customers are not generally created; people will not rush out and buy dogs if an advertisement motivates them to buy dog-food. Thus, it is reasonably safe to say that advertised products have a price premium attached to them.

Statistical studies have shown that lower-income groups generally watch more television than their higher-income counterparts,[41] and thus pay-TV prices would be even relatively more burdensome to the lower-income groups who have less means with which to acquire television programming. (In addition, even though pay-TV prices would be less burdensome to the upper-income groups, they are the ones generally more interested in diversity in television programming and thus stand to gain more satisfaction from the greater diversity offered by pay-TV.) Positive prices for programs would also tend to discourage lower-income viewers from experimenting with programs to develop and broaden their tastes.

According to the "ability to pay" equity principle, equity would require poor people to pay less than rich people for a similar amount of television programming. Hence, a public television system supported by tax dollars might be deemed more equitable than either a "free" television system or a pay television system.

Finally, somewhat related to the ability-to-pay principle of equity, there are many who define equity in the television programming market as equal opportunity or access to programs by all television set owners. If this definition of equity is employed, the limited availability of pay-TV services and its exclusion of consumers with insufficient funding for television programming, would cause pay-TV to be classified as less equitable than the "free" TV system which has the ability to reach virtually all parts of Canada. The introduction of pay-TV into Canada will most certainly affect "free" television broadcasting in some way, and thus many may suffer an overall deterioration of available television programming because of pay-TV if they have access to only "free" TV and not to pay-TV.

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[40] See Table 7, p. 94.

[41] For example, see Noll, Peck and McGowan, Economic Aspects of Television Regulation, Table 2-1, p. 24 .

Conclusion: Should the Pay-TV Industry be Regulated?

There are few, if any, purely economic reasons why the pay-TV industry should be subjected to specific governmental regulation. The cable-delivery of pay-TV is subject to decreasing costs of some degree, and this probably provides one of the economic justifications for regulation of the pay-TV industry. The optimal size of firm for delivery purposes may be large enough relative to the market to either warrant or make likely high concentration levels needed to achieve the relevant scale economies. Thus, regulation of entry, firm size and behavior may be called for in any one metropolitan area served by pay-TV. As far as the network functions are concerned, there is no concrete evidence to suggest the likelihood of the development of a monopolistic industrial organization in the pay-TV market, although certain economies of scale may be important. An industry structure in which many firms compete against each other to deliver programming over a common carrier may be an economically desirable structure.

There is little reason to believe that pricing behavior or technological innovativeness will be unduly undesirable in the pay-TV industry. While pricing performance may involve some bias away from the optimum, there is nothing in the nature of the regulatory process that can sufficiently improve this performance. (Although, in terms of the maximization of consumer surplus, regulation of profits and program provision may lead to a more "optimal" allocation of resources.)

Another possible economic argument for regulation of pay-TV is for regulation designed to induce the industry to be of additional benefit to the Canadian movie and program production industry. The extent of this regulation will depend on its cost relative to the values placed by the political process on the resulting extra benefit given to the Canadian movie and program production industry. Likewise, government regulation aimed at diminishing any of the negative social impact of pay-TV on Canadian culture may be justifiable.

From an economic viewpoint (which ignores the underlying implicit and explicit proprty rights resulting from the emergence of pay television), any regulation of the pay-TV industry should not be so restrictive as to substantially hinder the growth and development of the industry. The pay-TV industry has some very important inherent desirable characteristics, such as the fact that it is better geared to consumer tastes and preferences than the present over-the-air television system. Pay-TV may thus allocate resources more efficiently than the free-TV system, and will likely expand the variety of television programming to a more optimal level.

Although the growth of pay-TV is likely to threaten the current broadcasting system to some degree, politically the most undesirable result, there is no evidence to suggest that this effect will necessarily be extensive. Also, it will only replace free-TV as a source of television programming to the extent it is more efficient in providing television services to the public. (Likewise, pay-TV will only replace movie theatres as a viewing medium for major motion pictures if it is more efficient in providing movies to the viewing public.) From an economic viewpoint, any such replacement is a natural result of the free market system where only the strongest survive.

CHAPTER IV

CONCLUSION

In perspective, this thesis primarily involves an analysis of the effects of different institutional arrangements or supply structures in the television industry on the use and allocation of scarce resources. While a sufficient argument cannot be made for the existence of either a purely commercial television system or a purely pay-TV system, it appears possible that the introduction of pay television into the broadcasting industry can result in a net benefit to society based on the issues which have been discussed.

In the author's opinion, the government is basing its primarily negative policy stance towards pay-TV on the undesirable consequences of a pay-TV industry, without giving due consideration to its many potentially important benefits. It appears that those interest groups who would be adversely affected by the pay-TV industry have voiced a loud objection to the existence of pay-TV, and government officials seem to be most concerned with protecting these groups.

However, equal consideration should be given to the consumer side, and whether they should be restricted from access to a product which they would find desirable. In a letter submitted to the CRTC, one consumer presents his case very well:

> I am very disenchanted with both American and Canadian television and would like to see pay-TV develop a steady flow of intelligent programming instead of the current occasional dribble. I'm not concerned about the potential benefits to the Canadian broadcasting system but am very concerned about the benefits of the paying

> audience...I am not concerned whether we are to be exposed to a Canadian or American product but that we be exposed to a GOOD product. The nationality of a good product is unimportant to me as a member of the audience.[1]

If the primary effect of pay-TV is to offer consumers a greater variety in television entertainment, there is little reason to restrict its development. On the other hand, if pay-TV merely results in the provision of television programming similar to existing programming, the high transactions costs of collecting for programming effectively rule out any advantages of a pay-TV system.

From an economic standpoint, pay-TV will only threaten the present "free" television system if it is more efficient in providing television services to the public. Both television systems are, in the end, supported by the viewing public whether through direct payment (pay-TV) or in the form of higher prices for products to cover the cost of advertising. However, a pay-TV system may be more efficient in providing television programming (because of such reasons as the fact that it has the potential to more accurately reflect viewer wants and preferences), and thus it is desirable from an economic standpoint to allow its natural growth and development. The case for pay-TV is partially summed up by R. Moore:

> ...in our increasingly consumer —as opposed to producer — conscious society, the idea of paying for television should no longer be as 'threatening' as the commercial television and motion picture companies would have the public believe. We will have to educate the public to the hard fact that no matter how the money is transferred, all TV is paid for by the people. We pay for 'free TV' when the cost of advertising is added to the price of the products we buy; we also contribute our

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[1] CRTC, COMMENTS: Pay Television, Comment #6 by C. Brown.

> share to the tax dollars that go to the support of public TV. Of all the possible methods of paying for television, the user — or consumer-supported method is the most direct and has the closest 'demand' relationship to the source of 'supply'. It is also more consistent with American traditions than is tax-supported television.[2]

One of the basic issues involved with the regulation of the pay-TV industry appears to be whether the industry should be allowed to directly compete with the present broadcasting system, or whether it should be regulated so that it only supplements the current television system by offering programs not normally available to viewers. What is needed before any regulatory policy is developed is more information on the effects of pay-TV on the present television system if it is allowed to directly compete with the present television system. Will pay-TV be as disruptive as some suggest? Some of the evidence presented in this thesis suggests it will not be.

Although government regulation cannot be expected to significantly improve the economic performance of the pay-TV industry, regulation is politically inevitable. Without regulation pay-TV may lead to politically undesirable effects on the current broadcasting system, consumer equity, and some of the cultural aspects of our country. Canadian culture and equity within the economy appear to be highly important government objectives.

The dangerous aspect of developing any regulatory policy is that the policy is based only on the issues considered. Because of the complexities of our society and economy almost any industry will have a wide range of effects. Hopefully, all of the major effects will be taken into consideration, but the danger always exists that some important consequences will not be taken into consideration. For example, this thesis has not considered the effects of pay-TV on the cable-TV industry, and this may be important. For example, pay-TV may allow cable television to operate in areas which would otherwise be unprofitable, and therefore play an important role in the growth of the cable-TV industry.

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[2] Moore, "Public Television Programming and the Future," pp. 243-44.

When all is said and done, the case for government intervention in the economy is not a very strong one from an economic viewpoint. Not only are there relatively few cases in which government intervention is theoretically justified on an economic basis, but the inability of the regulatory process to provide efficient and effective solutions further limits the number of situations in which government regulation can be justified.

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APPENDIX

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APPENDIX A

Edmonton Weekly Television Programming
(selected types of programs)

May 7-13 (1977)

6 Channels: 3 Broadcast
3 Cable

Names

(1) Detective Shows

Number	23
Time offered	43
Number of Channels	5

- Adam-12
- The Andros Targets
- Baretta
- Charlie's Angels
- Dan August
- Delvecchio
- Dog and Cat
- Emergency
- Feather and Father
- Future Cop
- Hawaii Five-O
- Ironside
- Kojak
- Nancy Drew/Hardy Boys Mystery
- Mannix
- Most Wanted
- Police Story
- Rockford Files
- Starsky and Hutch
- The Streets of San Fransisco
- Swat
- Switch

(2) Game Shows

Number	23
Times offered	101
Number of Channels	6

- Con Game
- Concentration
- Definition
- Double Dare
- Double Exposure
- Family Feud
- First Impression
- High School Bowl
- Hollywood Squares
- Hot Hands
- Its Your Choice
- Let's Make A Deal
- Liar's Club
- Match Game
- Name That Tune
- $128,000 Question
- Party Game
- The Price is Right
- Reach For The Top
- Second Chance
- Shoot For The Stars
- $20,000 Pyramid
- Wheel of Fortune

(3) Soap Opera

Number	14
Times offered	80
Number of Channels	5

- All My Children
- Another World
- As The World Turns
- Coronation Street
- Days of Our Lives
- The Doctors
- The Edge of Night
- General Hospital
- The Guiding Light
- Love of Life
- One Life to Give
- Ryan's Hope
- Search For Tomorrow
- The Young and The Restless